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AND CONTRACT REPORTER.

A JOURNAL OF ART, CIVIL ENGINEERING & BUILDING.

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FORTHCOMING EVENTS.

Friday, January 6.
Birmingham Architectural Association: Mr. C. Spooner on “Modern Churches.”
Monday, January 9.
Architectural Association: Mr. H. H. Statham on “Architecture as Plan and Section.”
Liverpool Architectural Society: Paper by Mr. P. Morley Horder.
London Institution: Professor E. A. Gardner on “Art as Expression and as Illustration.”
Royal Academy: Lectures on Painting by Sir W. B. Richmond, K.C.B., R.A. (1) “Choice of Subjects.”
Tuesday, January 10.
Guild of Architects’ Assistants: Mr. H. Guicharde Todd on “Art and Registration.”
Wednesday, January 11.
Northern Architectural Association: Paper by Mr. J. Walton Taylor.
Thursday, January 12.
Royal Academy: Lectures on Painting by Sir W. B. Richmond, K.C.B., R.A. (2) “Some Great Portrait Painters.”
London Institution: Mr. D. G. Hogarth on “Cretan Discoveries.”
Monday, January 16.
Royal Institute of British Architects: Mr. Halsey Ricardo on “Cardinal Medici’s Pleasure House.” Award of Prizes and Studentships.

ARCHITECTURE IN 1910.

IN common with every other department of our national life, the event of the past year for architecture has been a sad one—the decease of KING EDWARD VII.

THE POLITICAL ATMOSPHERE

of the past year has not in other respects been favourable to the business of building. We cannot have two general elections in one year, and the consequent abnormal outlay of some four millions sterling, without architects and builders feeling the effect of such a diversion of expenditure by the classes who are the more likely section of the community to furnish clients. Nor can the

NEW METHODS OF TAXATION

which have been introduced fail to have a prejudicial effect on those who are disposed to look on bricks and mortar as a desirable form of investment, not so much from the nature of the imposts themselves—for capital in the long run is always able to protect itself, and the ultimate incidence of land taxes is not on those who own the land, but on those who borrow the use of it—but the introduction of fresh methods of taxation induces a feeling of insecurity and uncertainty as to the finality of the present burdens; hence nobody is inclined to invest or speculate in land and buildings when there is nothing more definite on which to base calculations than a vague fear of indeterminate liabilities. It has been asserted that there is a

REVIVAL OF TRADE

generally in this country; but this must be discounted by a consideration of the general rise of prices in all commodities throughout the world, part of which rise is due to the effect of lessened production in the slack times from which we have been suffering for some years—that

is to the regular swing of the pendulum as it oscillates between boom and slump—but the greater part to the cheapening of gold which is a necessary consequence of its increased production at less cost. Gold is now practically universally the standard of currency throughout the world, and when the amount of it is largely increased, with a concurrent lessened cost of obtaining it, its value, compared with other things, is diminished, and there is a general rise in the nominal price of all things that are paid for in gold. It has also been asserted that the

CONDITION OF THE BUILDING TRADE

is improving in this country because the percentage of the unemployed in the trade unions is somewhat less than it was a year ago; but here again the assertion is made without consideration of the remarkable diminution of trade union membership that has occurred. That is to say, the building trades are in such a parlous condition that many of the aristocracy of labour, the skilled workmen, can no longer afford to belong to trade unions. Hence the percentage of unemployed in the actual membership of the unions is not a true criterion of the amount of unemployment in the building trade. The greater number of the unemployed and of the partially employed is to be found amongst those workmen who are not members of the unions.

Even if the general trade of the country were commencing to improve, this does not imply any immediate increase of building activity, for the building trade is always one of the last to feel the effect of any wave of prosperity in the general community. Certainly a general inquiry amongst architects, quantity surveyors, and contractors would dispel any idea that improvement has as yet become manifest, or is likely to occur in the building trade for some little time to come.



GAWSORTH HALL—THE HOME OF THE FITTONS IN QUEEN ELIZABETH'S REIGN.



THE PRIEST'S HOUSE, PRESTBURY, WITH OPEN-AIR ROSTRUM.

One of the notable features of the past year has been the remarkable awakening of public interest in

TOWN PLANNING,

due primarily to the coming into operation of the Housing and Town Planning Act, but even more largely to the extraordinarily successful Conference and Exhibition organised and carried through by the Royal Institute of British Architects, which attracted visitors from all over the world, including some of the most prominent experts of Germany, France, and the United States, and furnished the British public, as well as the architects of this country, with some idea of what is meant by Town Planning. At the same time it has assisted in adding to the influence of the Royal Institute of British Architects with the British public, and the respectful recognition of its position which has of late been one of the most encouraging developments in the world of architecture.

Although we have still much to learn in this country with regard to town planning, the Conference has done much to afford instruction from the experiences and experiments of other countries even more than from the high-flown eloquence of some of our would-be "experts" in town planning.

Besides that held by the Royal Institute of British Architects, other conferences have been held during the year under the auspices of the National Housing and Town-planning Council, at which the discussions have been of a more practical and useful character than those at Conduit Street.

The close of the year has seen the result of the first town-planning competition of any importance in this country—that for the design of the new town of Ruislip Manor, Middlesex. A critique of the drawings submitted in this competition we give elsewhere in this issue.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS, in addition to the Town-planning Conference, has in the past year erected other notable landmarks in its history. A new set of by-laws, after considerable discussion, has

been adopted, in which several vital modifications have been made in the polity of the Institute. The problem of better housing accommodation has to a certain extent been solved by the adaptation of further galleries at No. 9 Conduit Street, which might have been acquired years ago at far less cost than now, had the rulers of the past been wise enough to seize opportunities offered. The regulations for competitions have been revised and brought more nearly up to date than those that were closely modelled on the old "suggestions." The increase of the nominal membership of the Institute by the creation of the new class of

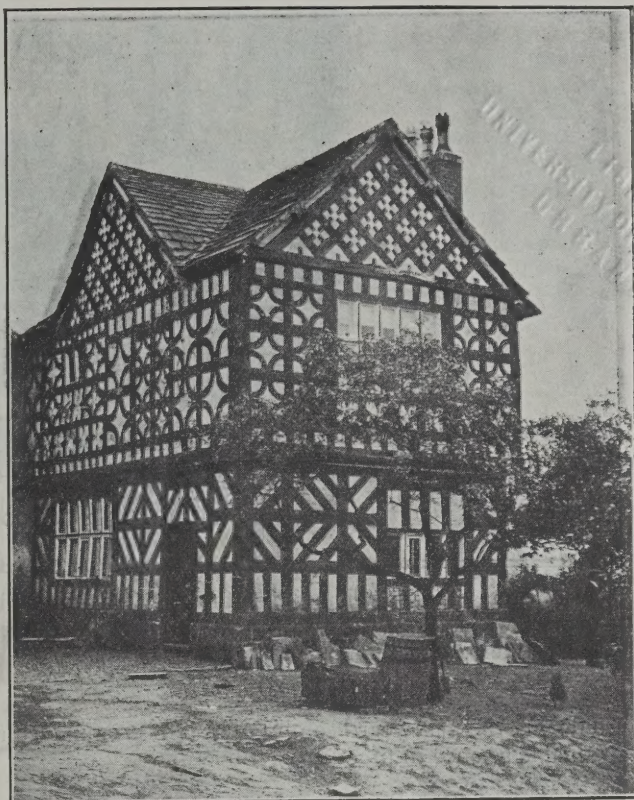
LICENTIATES

has been considerable, but is still far short of the ideal inclusion of all worthy and qualified architects within the ranks of the representative body of the architectural profession. In part this has no doubt been due to the position taken up towards the scheme of licentiate-ship by the Council of the Society of Architects, who have advised their members not to join the ranks of licentiates; in part it is the result of that spirit of apathy and love of selfish isolation which has kept many architects outside the ranks of any professional society, some of them, no doubt, from a feeling that they are not sufficiently genuine and qualified architects to be admitted into any society, and some from a consciousness that they are not prepared to sign a declaration that they will conduct their business in the future in an honest and straightforward manner.

To awaken from apathy some of those who are not as yet members of any architectural society, to explain the present position of the Royal Institute, and to dispel false ideas, a missionary tour has been undertaken by Messrs. A. W. S. CROSS and GEORGE HUBBARD, as representatives of the Council of the Institute, and many wandering sheep have thus been brought into the fold. But no propaganda can bring every so-called architect within the ranks of the Royal Institute of British Architects, and any expectation that the scheme of licentiate-



THE PORTICO, HANDFORTH HALL.



CHORLEY HALL, ALDERLEY.

ship would do so was foredoomed to disappointment, and those who indulged or professed to indulge in such an expectation may say, if they like, that the scheme of licentiate-ship has failed. As a means of enrolling in the corporate body of the profession a large number of architects who would otherwise have remained outside the scheme of licentiate-ship must be admitted to have proved a success.

REGISTRATION

of some kind has thus during the past year been brought appreciably nearer, and in earnest thereof it must be recorded that the Council of the Royal Institute has approached the Council of the Society of Architects with a view to a joint consideration of the terms of a proposed Bill.

The Royal Institute has taken a noteworthy stand in a matter of great public importance, at least to the Metropolis, the scheme for

ST. PAUL'S BRIDGE,

and the position of the Institute is unassailable in regard to the question. Recognising that the scheme as put forward by the Corporation is decidedly faulty, the Council of the Institute has, with great tact and forbearance, declined to be drawn into the false position which has been offered of proposing a definite scheme, but has taken its stand upon the firm basis that the Corporation should obtain the best architectural advice before commencing to carry out any scheme. We are glad to be able to record that at the last moment, and although plans have been lodged for Parliamentary sanction, the Bridge House Estates Committee have taken the Institute's petition into consideration and admitted the President to a conference.

One very vital objection to the Corporation's scheme is the imminent danger to

ST. PAUL'S CATHEDRAL

which would ensue from the proposed tram-subway on the east side, and Mr. MERVYN MACARTNEY, the Surveyor to the Fabric, would have failed in his duty if he had not called public attention to the possibility—nay, probability—of a terrible catastrophe to the Metropolitan cathedral if this tram-subway is carried out. Mr. MACARTNEY's apprehension is no bogey. It is as absolutely sure as anything

can be that if the tram-subway proposed is carried out it will be at the risk, we do not say certainty, but the very extreme risk, of a movement of the none too reliable foundations of St. Paul's Cathedral that may bring about the direst disaster. The advantages of a through tramway connection between the north and south of London will surely be too dearly bought if the passengers some morning find the dome of St. Paul's a shattered mass of ruin on the floor of the nave.

CANTERBURY CATHEDRAL

has seen in the last week of the year the completion of a definite section of its restoration by the ceremony of placing in position, by the Archbishop of CANTERBURY, of the top stone of the last of the four pinnacles of the north-west tower. Dean WACE records that, following the restoration of the interior of the cathedral and the chapter house at a cost of 20,000*l.*, the completion of the reparation of the central tower in 1908 at a cost of about 15,000*l.*, the work on the western towers has entailed an expenditure of 7,700*l.*, and still requires a further sum of 2,000*l.* The repair of the south-west tower is estimated to cost 5,228*l.*, and that of the nave, pinnacles, and other parts of the building another 6,000*l.* At

WINCHESTER CATHEDRAL

work has been continued during the past year, bringing up the total of expenditure to 97,000*l.*, but Dean FURNEAUX states that "a few thousands" are still required to complete the work; so that it looks as if the amusing estimate of 99,000*l.* will be enlarged, as we expected, beyond the round 100,000*l.*

LIVERPOOL CATHEDRAL

is making steady progress towards completion, and the past year has seen the dedication of the Lady Chapel, with the adoption of a remarkable revision of the original design for the body of the church.

The preservation of the

ANCIENT MONUMENTS

of the country has been advanced by the passing of an amending Ancient Monuments Protection Act and by the work of the Royal Commissions appointed for England, Scotland, and Wales respectively, and the publication of



SCHOOL AND SCHOOL-HOUSE, ARLEY GREEN.

their interim reports. The inventory for Hertfordshire is a model which we hope to see followed at no distant date by other publications of a similar character.

PHOTOMETRY

has during the past year been brought into prominence as a valuable science in practical architecture.

THE BRUSSELS EXPOSITION

has afforded an opportunity for the study of architecture, particularly that of modern Europe, by gathering together examples of the methods of design in vogue amongst different nationalities.

IMPORTANT BUILDINGS COMPLETED

during the past year include Lancaster Town Hall, at a cost of 155,000*l.*, of which the late Mr. E. W. MOUNTFORD and his partner, Mr. F. DARE CLAPHAM, were the architects; the Mitchell Library, Glasgow, costing between 50,000*l.* and 60,000*l.*, designed by Mr. WILLIAM B. WHITTIE; Municipal Buildings for South Shields, at an expenditure of 70,000*l.*, of which Mr. E. E. FETCH was the architect; Bethnal Green Town Hall, London, the designs for which, by Messrs. PERCY ROBINSON and F. ALBAN JONES, were selected in competition; new offices for the Anglo-American Oil Company, Queen Anne's Gate, Westminster, of which Mr. ERNEST RUNTZ was the architect, and which have cost some 60,000*l.*; the Finsbury Park Empire Theatre, London, costing 45,000*l.*, carried out under Messrs. FRANK MATCHAM & Co., who have also altered and enlarged the old Hengler's Circus into the London Palladium at an expense of 200,000*l.*; Agricultural buildings for Cambridge University, by Mr. ARNOLD MITCHELL; Nurses' Home for Leicester Infirmary, of which Messrs. EVERARD, SON & PICK were the architects; the churches of St. Mellitus, Hanwell, and All Saints, Bedford, both designed by Sir ARTHUR W. BLOMFIELD & SONS, the latter in collaboration with Mr. GEORGE P. ALLEN; the church of St. Chad, Burton-on-Trent, costing 47,500*l.*, of which the late Mr. G. F. BODLEY, R.A., and his successor, Mr. C. G. HARE, were the architects.

IMPORTANT WORKS COMMENCED

include public buildings at Burslem, which are being erected at a cost of about 25,000*l.* from the designs of Messrs. RUSSELL & COOPER, selected in competition; Grand Lodge premises, George Street, Aberdeen, to cost 30,000*l.*, of which Mr. A. HUNTER CRAWFORD is the architect; extensions to Stoke-on-Trent Town Hall by Messrs. WALLIS & BOWDEN at an expenditure of about 26,000*l.*; the Royal Academy of Music, Marylebone, the design of which, by Messrs. ERNEST GEORGE & PETO, was exhibited at the Royal Academy of Arts; the Burgh Academy, Dumbarton, designed by Messrs. MACWHAN-

NELL, ROGERSON & REID, to cost 30,000*l.*; additional premises for Messrs. WHITELEY to the amount of 150,000*l.*, of which Messrs. JOHN BELCHER, R.A., and J. J. JOASS are the architects; extensions to Swansea General Hospital, under Mr. GLENDINNING MOXHAM, at a cost of about 25,000*l.*; new county buildings for Berkshire at Reading, designed by Messrs. WARWICK & HALL; new premises at Leeds for the Pearl Life Assurance Company, involving an expenditure of 60,000*l.*, for which Mr. WILLIAM BAKEWELL's design was selected in a limited competition; new buildings for cancer treatment and research at Middlesex Hospital, designed by Mr. EDWIN T. HALL, which will cost some 50,000*l.*; new opera house for Mr. OSCAR HAMMERSTEIN in Kingsway, London, the expenditure on which will amount to 100,000*l.*, and of which Mr. BERTIE CREWE is the architect; the church of Holy Trinity, Kingsway, by Messrs. JOHN BELCHER, R.A., and J. J. JOASS; the parish church of Broadstairs, Kent, by Mr. W. WILLMOTT; St. Gabriel's Church, Sunderland, by Mr. CLAYTON GREENE; and a church at Dorchester, by Mr. C. E. PONTING.

The most important of the

COMPETITIONS

decided during the past year was that for the National Museum for Wales, in which the assessors, Sir ASTON WEBB, C.B., R.A., Mr. J. J. BURNET, and Mr. EDWIN T. HALL, awarded the first place to Messrs. A. DUNBAR SMITH and Mr. CECIL C. BREWER, the second to Mr. T. L. VESPER, the third to Mr. H. T. HARE, and the fourth to Messrs. DAVID MILNE and J. WILLIAM HEPBURN.

Other open competitions of importance were those for the Usher Hall, Edinburgh, and the enlargement of the Queen's University, Belfast. In the former the assessor, Sir ASTON WEBB, C.B., R.A., placed first the design of Messrs. STOCKDALE, HARRISON & SON and Mr. HOWARD H. THOMPSON; second, that of Mr. F. W. SIMON; third, that of Mr. H. E. CLIFFORD, and fourth, Mr. WILLIAM HEYWOOD. At Belfast Sir ASTON WEBB was also the assessor, and awarded the first place to Mr. W. H. LYNN, R.H.A., the second to Messrs. HENRY TANNER and F. DARE CLAPHAM, and the third to Messrs. A. MARSHALL MACKENZIE & SON.

Amongst limited competitions has been that for Leeds Training College, in which the assessor, Sir ASTON WEBB, placed in order of merit the designs of Mr. G. W. ATKINSON, Mr. ALBERT E. KIRK, Mr. SYDNEY D. KITSON, Mr. W. PEEL SCHOFIELD, Messrs. PERCY ROBINSON & W. ALBAN JONES. For the new home of the Institution of Civil Engineers, to cost 100,000*l.*, the designs of Mr. JAMES MILLER were selected in limited competition. In the local competition for the extension of Oldham Town Hall Mr. G. A. WILLOUGHBY, the assessor, placed first the designs of Messrs. TAYLOR & SIMISTER; second, that



AT BRERETON GREEN, SANDBACH.

of Messrs. WINDER & TAYLOR; third, that of Messrs. JENKINS, MATLEY & MILLS. The limited competition for the new Examination Hall of the Royal College of Physicians and Surgeons was won by Mr. ANDREW N. PRENTICE. Mr. TEMPLE MOORE, the assessor, decided a limited competition for the Canon Greene Memorial Church and Parish Hall, Clapham Common, in favour of Mr. H. P. BURKE DOWNING. Other limited competitions were that for the East Anglian Institution for Blind and Deaf Children, Gorleston-on-Sea, in which Mr. BURKE DOWNING, the assessor, awarded the first place to Mr. JOHN E. BURTON, the second to Messrs. JOHNS & BROWNE, and the third to Messrs. OLEY & HAWARD; that for Stockport Library, which resulted in Messrs. BRADSHAW & GASS being placed first, Mr. JOSEPH HOLT second, and Mr. G. H. WENYON third; that for Council offices at Sheringham, where Messrs. STANLEY SIMONS & Co. were first, Mr. F. ENDELL ROSSER second, and Mr. F. R. SCOTT third; whilst that for Airdrie Town Hall resulted in the success of Messrs. JAMES THOMSON & SONS, first, Messrs. GEORGE ARTHUR & SON, second, and Mr. A. DANSKIN AITKEN, third.

There have been several competitions for school buildings, the most active class of architectural work at the present time. Some of these were open, some limited, and included Linthorpe Council Schools, Middlesbrough, Messrs. OLIVER LEESON & WARD being the assessors, and the premiated competitors Mr. JAMES FORBES, Messrs. R. LOFTHOUSE & SONS, Messrs. BOTTOMLEY & WELLBURN, Mr. A. FORRESTER; Elementary School, Byron Street, Macclesfield, won by Messrs. WHITTAKER & BRADBURN; United Methodist Church Schools, Cradley Heath, with Messrs. HICKTON & Farmer first, Messrs. BAILEY & MCCONNALL second; Kimberworth Schools, assessed by Mr. E. R. ROBSON, who awarded Mr. J. E. KNIGHT the first premium and Messrs. WILLEY & JENKINSON the second; Secondary School, Peterborough, where Mr. JOHN W. SIMPSON placed in order of merit Mr. BROWN RIGG, Messrs. HENRY TANNER & GREEN, Mr. G. H. V.

GOULD, Messrs. CHEERS & SMITH, Messrs. PACKER & OREWITT, Messrs. RUSSELL & COOPER; Watford Grammar School, which Mr. ERNEST NEWTON assessed in favour of Messrs. RUSSELL & COOPER, first, Messrs. SPALDING & MYERS, second, Mr. C. P. AYRES, third; Elementary School, Pontefract, where Mr. SYDNEY D. KITSON, the Assessor, selected the design of Messrs. TENNANT & COLLINS for first place, that of Mr. JAMES FORBES for second, and that of Messrs. W. H. THORP & SON for third; Council School, Middlesbrough, where Messrs. T. MELLARD REEDE & SON, the assessors, gave the leading positions to Messrs. CLARK & MOSCROP, Mr. J. FORBES, and Messrs. KITCHING & LEE; Elementary School, Winchester, where Mr. G. E. BOND was the assessor, and the premiated competitors Mr. A. H. JOHNSON, Mr. J. B. JONES, and Messrs. B. D. CANCELLOR and EDWARD STOCKWELL; Saltburn Secondary Schools for Girls, for which Mr. PAUL WATERHOUSE, M.A., the assessor, awarded the premiums to Messrs. RUSSELL & COOPER, Messrs. F. J. EEDLE & MYERS, and Messrs. EVANS & SON; Harvey Grammar School, Folkestone, where Mr. E. FINN was first, Mr. E. J. SHREWSBURY second, and Messrs. HALLIDAY & PETERSON third.

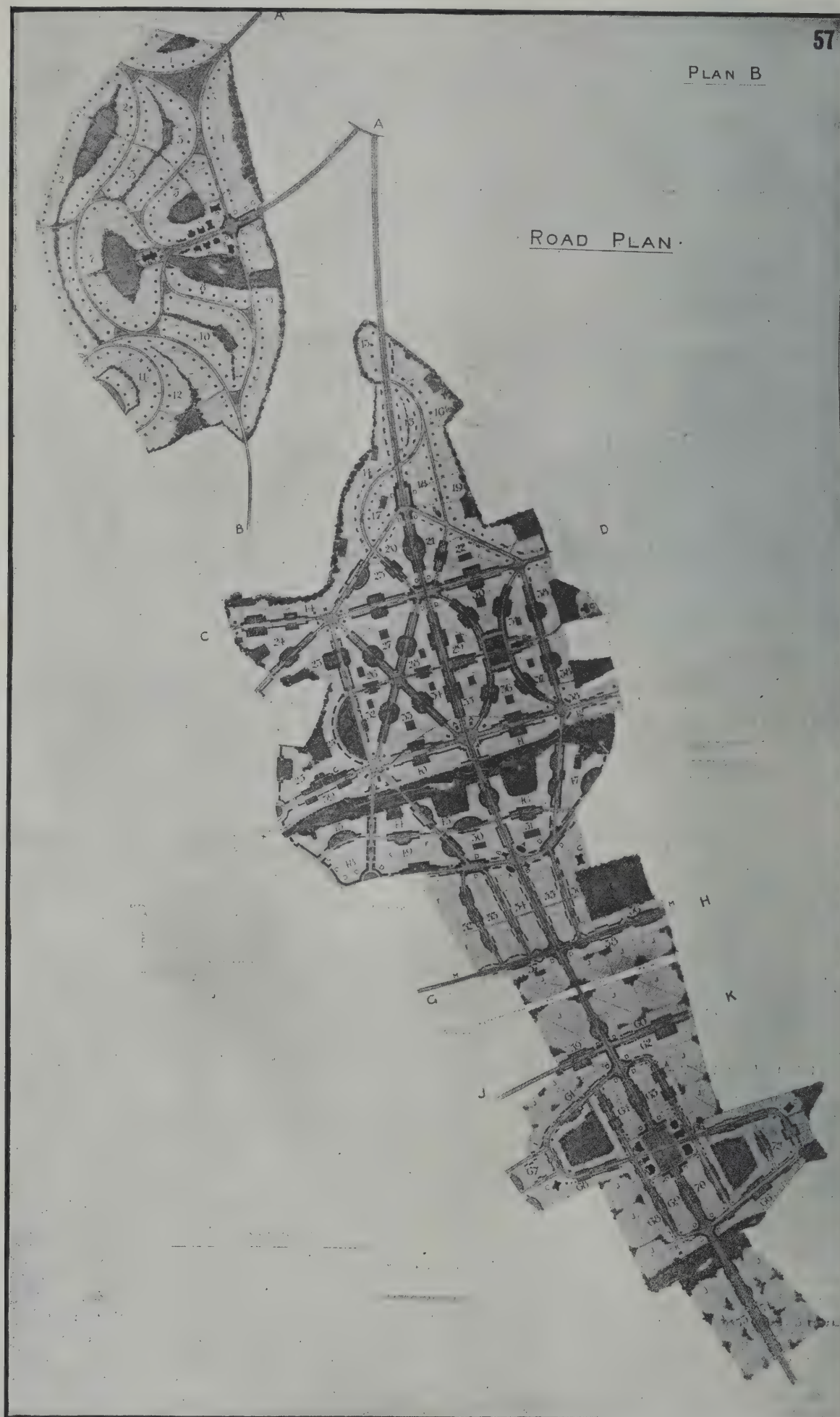
Amongst other competitions decided, that at Wood Green, Middlesex, for public baths was assessed by the late Mr. A. HESSELL TILTMAN, who placed first Mr. HAROLD BURGESS, second Mr. E. HARDING PAYNE, and third Messrs. F. J. & F. DANBY SMITH. Mr. EDWIN T. HALL was the assessor for Herne Bay Pier Pavilion, and placed first the design of Mr. PERCY J. WALDRAM and Messrs. MOSCROP, YOUNG & GLANFIELD, and gave the second place to Mr. STANLEY C. RAMSEY. For a Congregational Church at Endcliffe, Sheffield, Mr. CHARLES HADFIELD was the assessor, and the premiums were awarded to Messrs. MORGAN & BRACE, Messrs. W. WADINGTON & SON, Messrs. WITHERS & MEREDITH. In the competition for business premises for the Leeds Industrial Co-operative Society the first premium of 100l. was awarded by the assessor, Mr. F. E. L. HARRIS, to Messrs. BRADSHAW & GASS, the second, 50l., to Messrs. LA TROBE & WESTON, and the third, 25l., to Messrs. THOS. NEWBY & SON. For a branch library for Walton and Fazakerly, Liverpool, Mr. W. E. WILLINK, the assessor, placed first Messrs. BRIGGS, WOLSTENHOLME & THORNELY, second Mr. R. WYNN OWEN, third Messrs. T. T. REES and F. B. HOBBS. Messrs. LEEMING & LEEMING adjudicated in the competition for municipal buildings at Denbigh, and awarded the premiums to Messrs. POTTER & ELCOCK, first, Mr. A. FAIRDALE, second, Messrs. HUGH MACKINTOSH & NEWMAN, third.

HONOURS

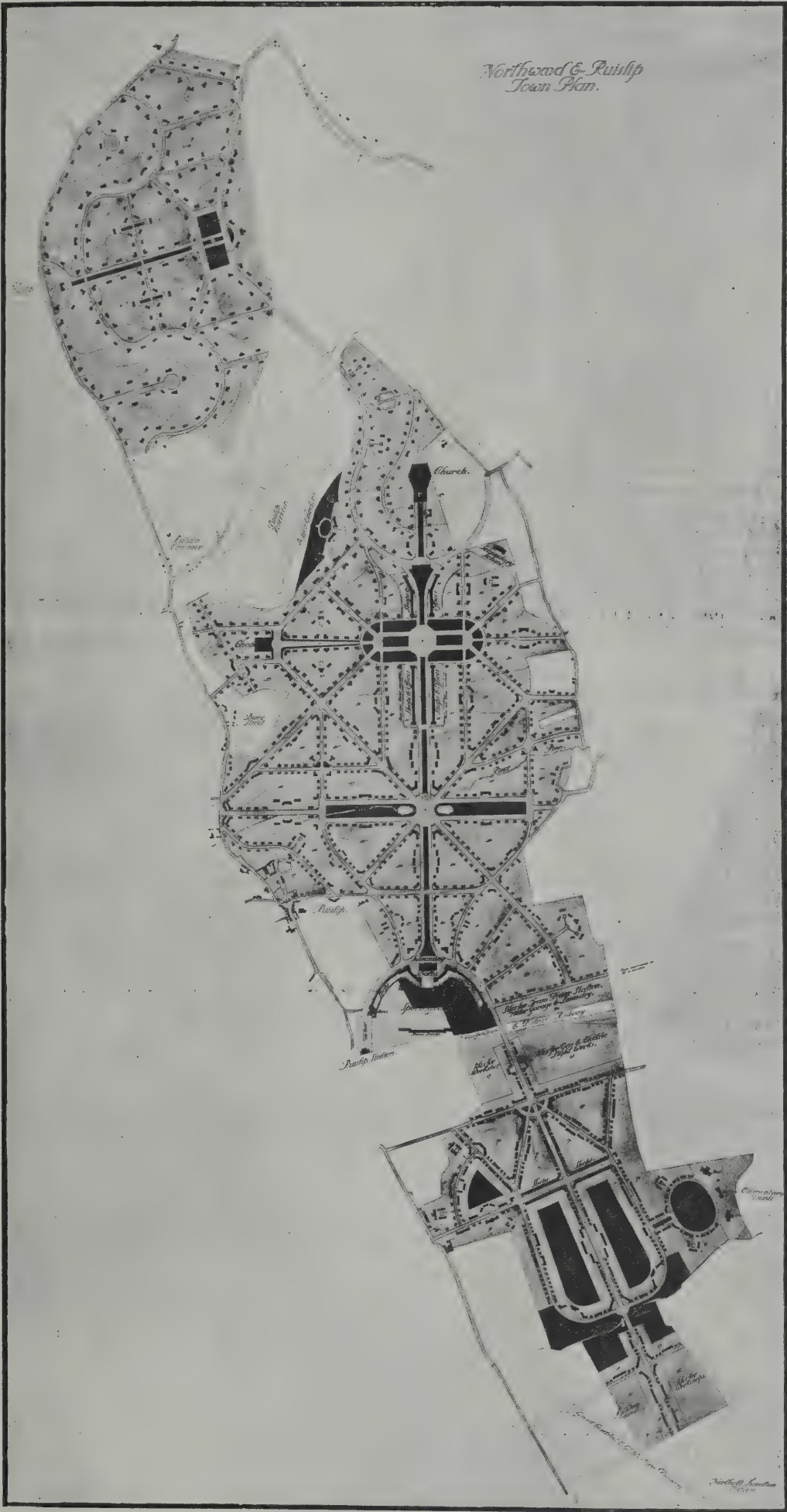
obtained by architects during the past year include a Knighthood for Sir ALEXANDER ROSE STENNING, F.R.I.B.A., and past president of the Surveyors' Institution; the award of the Royal Gold Medal to Mr. T. GRAHAM JACKSON, R.A., who also received from Cambridge University the honorary degree of LL.D. Mr. THOMAS ROSS, F.S.A., received a similar honour from Edinburgh University, and Mr. J. J. BURNET, A.R.S.A., from Glasgow University. Mr. ERNEST GEORGE has been elected an Associate of the Royal Academy of Arts.

OBITUARY.

The ranks of architects have been decreased during the past year by the decease of Mr. BENJAMIN TABBERER, Mr. ROBERT WALKER, Mr. A. BURNELL BURNELL, Mr. HENRY JARVIS, Mr. GEORGE THOMAS, Sir THOMAS DREW, Mr. E. SHEWBROOKS, Mr. CAMPBELL DOUGLAS, Mr. WILLIAM OWEN, Mr. GEORGE AITCHISON, Mr. H. L. FEDDEN, Mr. T. J. BAILEY, Mr. H. SPALDING, Mr. M. H. HOLDING, Mr. W. BANKS GWYTHYR, Mr. A. HESSELL TILTMAN, Mr. J. MANDER, Mr. W. COPPARD BANKS, Mr. J. T. CHRISTOPHER, Mr. T. H. HITCHIN, Mr. H. J. TREADWELL, Mr. F. HEALEY, Mr. W. HALE, Mr. R. SELDEN WORNUM, Mr. JOHN YOUNG, Mr. W. S. R. PAYNE, Mr. A. E. PEARSON, Mr. E. BOARDMAN, Mr. C. HODGSON FOWLER.



RUISLIP MANOR COMPETITION.—Second Premiated Design by Mr. GEORGE HORNBLOWER, F.R.I.B.A.



RUISLIP MANOR COMPETITION - Third Premiated Design by Mr. H. R. GARDNER

RUISLIP MANOR COMPETITION.

AS we announced last week, the premiums in this, the first really important town-planning competition in this country, have been awarded to: First, Messrs. A. & J. SOUTAR; second, Mr. GEORGE HORNBLLOWER, F.R.I.B.A.; third, Mr. H. R. GARDNER. It is remarkable that none of these gentlemen have been amongst those who have delivered lectures or read papers during the town-planning boom of last year. Nor have they taken a prominent part in conferences, or written letters to the *Times*, or drawn parallel straight lines on the map of London and sent the result to a Sunday newspaper, or even, as far as we are aware, made a suggestion for a KING EDWARD Memorial. Hence they cannot, of course, be acknowledged as "experts" in town-planning. They are merely the men who, at the first time of asking, have, in the opinion of Sir ASTON WEBB and Mr. RAYMOND UNWIN, designed a new English town of some 40,000 inhabitants better than anyone else has done.

It would appear from the character of the designs that have received premiums that Sir ASTON WEBB and Mr. RAYMOND UNWIN consider that the first essential of a good town plan is that it should form a pretty and symmetrical pattern on the map. If the town were to be laid out on a level plain, like some American cities, its streets might as well be so disposed as not, but the estates of the King's College of Our Lady of St. Nicholas of Cambridge, in the parishes of Northwood and Ruislip, in the County of Middlesex, on which the new town is to be built, are anything but level, and the Copse Wood area on the north is particularly hilly, with slopes in some cases as steep as one in eight, and the first thought of every experienced estate-planner would be that this was a case in which very careful consideration should be given to contours.

The authors of the first premiated design have dodged some of the most difficult slopes by leaving them as wooded hillsides, and have then laid out their very pretty and symmetrical road plan, regardless of contours. This looks very nice and architectural on the map, but when the town is built who is going to see the pretty patterns except from an aeroplane or dirigible? And even from an aerial point of view the symmetry will be marred by one-half of a pattern running uphill and the other downhill, with roads curved in profile although straight on plan.

We are bound to assume that the roads shown on the plans of competitors will follow fairly closely the natural surface of the land, and that difficulties of level are not to be overcome at great expense by drastic cutting and embankments.

Although, as we have said, the winners have evaded the most difficult slopes, we still find a main road with a gradient of one in fourteen, others that are nearly as steep, and sewers that run uphill if, as they ought, they follow the roads.

But there are other things besides levels to be considered in planning a town. Ruislip Manor will be inhabited almost entirely by those whose daily occupation is in London, and whose primary thought is catching the train. From this point of view there is little fault to find with the selected design. The dwellers in the new town are not to be very religious, four churches only—so described, possibly a fifth is intended—being provided for 40,000 souls. We do not think the Bishop of the Diocese will approve the selected plan of the town, and other communities besides the Anglican Church will want places of worship. Most of the children will have to go to boarding-school or make long railway journeys every day, as there are only two schools for some 25,000 children. If the grand place near the reservoir is intended to be surrounded by shops, the shopping centres would be sufficient in number, though this place and the so-called market-place are not as central as is desirable. The open-air recreation spaces are ample and well distributed, but the inhabitants of the new town are expected to stay at home in the evening or run up to London for amusement, as one club and one library would not accommodate a large proportion of the seven or eight thousand householders.

No fire-station nor police-station is shown, unless the "public buildings" in the market-place are devoted to these purposes, and then they are in the wrong place and four miles from the other end of the estate.

The number of houses proposed by Messrs. SOUTAR is 7,642, of which 3,556 are not to exceed 30l. rental, 3,541 are between 30l. and 60l., 524 between 60l. and 100l., and 21 are to be of rentals exceeding 100l. We think, having regard to the distance of the estate from London, that these proportions are radically wrong, whilst the number of houses must be materially diminished to provide the other essential components of a town.

Thus the winning plan is a pretty piece of pattern-designing, but not a town plan, whilst its symmetry is only obtained by a disregard of natural conditions. For example, the river Pinn is to be metamorphosed into a highly formal ornamental water; the only high-road now on the estate, a typical Middlesex road, is to be diverted and straightened out; the Yeading brook, which at present is liable to floods, is to be abolished somehow, and the market-place built over it. On the other hand, the retention of the wooded heights and the disposition of the centres of interest are good points in the plan.

The second premiated design, by Mr. GEORGE HORNBLLOWER, F.R.I.B.A., is also an example of the pretty pattern type, as may be seen from our illustration, but not so pretty as that of Messrs. SOUTAR. The main road from Northwood to Northolt Junction is well laid out, but the suggestion of a tramway route for this and the cross-road between points G and H is a mistake, as trams, except along a shopping thoroughfare, reduce the letting value of property by 20 to 50 per cent. Some of the gradients of this road at the northern end of the Park Wood area are too steep. We like the planning of the Copse Wood area, although the adoption of the road across the golf-course suggested by the promoters is more detrimental than Messrs. SOUTAR's treatment. Some of the gradients in this area are severe. We gather from the plan that the Copse Wood area is to be devoted to detached houses of high rental, and that on the other areas the rental value of the houses gradually diminishes from the north to the south end of the town, which we think is a correct distribution. A fault in the design is that a considerable number of the houses face north and south, which from the shape of the estate might easily have been avoided.

Mr. H. R. GARDNER, the author of the third premiated design, has also produced a pretty pattern, but we cannot imagine how the assessors could consider a town of 40,000 inhabitants to be properly planned as the highly organised independent entity suggested in the instructions with one church, one chapel, one secondary school, one elementary school, and only two shopping centres in a length of four miles. Nor do we think that a pretty pattern compensates for a main road with a gradient of one in eight. Continental town planners consider that one in thirty is the maximum gradient which should be allowed in main roads, and that even this means an expenditure of three times the power in haulage of that required on the level.

At the time of our visit no bird's-eye perspectives were on view of any of the three premiated designs. These drawings were optional in the competition, and presumably were wisely withheld by the winners of premiums, for if truthfully drawn they would have utterly spoilt the value of the symmetrical patterns drawn on the flat.

None of the other competitors have reached the excellence in pattern design of the premiated plans, but many have good features as town plans. Several have by connecting the Copse Wood and Park Wood areas, immediately north of the reservoir, enforced a roundabout route to Northwood Station.

Mr. GEOFFREY LUCAS is one of these, and has also introduced an expensive and scarcely necessary feature in a bridge over the reservoir. The key-note of his plan is a main route, with squares at intervals, in which public buildings are to be erected. He suggests tramways, the objection to which we have already stated. Too many of the houses have north and south aspects.

6 feet 9 inches above the floors throughout the Sorting Office block, except to the basement, and the lavatories and staircases are tiled from floor to ceiling. The floors generally are of maple blocks.

The interior of the public office and the entrance halls have been more lavishly treated than usual, this being the largest and the principal public office of the kingdom, while the building is the largest letter-sorting office in the world, exceeding that in New York by some 90,000 feet sup. The walls are lined with Arni Alto, a veined Italian marble approaching white, with panels, dado, and door architraves of Irish green, while the caps, bases and key blocks to the window arches are of kupronised plaster. The telegraph writing tables are constructed of bronze with plate-glass writing slabs and panels. The woodwork generally is of wainscot, oiled and well rubbed.

There are few fireplaces, as the building is warmed generally by hot water, steam calorifiers being placed in six positions in the basement. There is a fresh-air inlet to each radiator when against an outside wall, and consequently the air passes into the building over the radiator. There are four boilers, each 30 feet by 7 feet 6 inches diameter, with automatic feeds. In regard to ventilation, there are extracting fans placed in chambers on the roof, each of the lower floors having separate fans.

The lifts, fourteen in number, are actuated by electricity, as is also the system of conveyors, chiefly endless bands, which transfer bags and letters to and from various parts of the building. Metallic filament lamps are used throughout for lighting. The current required is generated at the Post Office power station at Blackfriars, and there is a sub-station in the basement of the new building for reducing the current from 6,600 to 440 volts for power and 110 volts for lighting purposes.

The drainage is entirely of cast iron, suspended from the basement ceiling, and there is no drainage to basement, which is below the sewer level. The water mains and heating pipes are similarly suspended.

The floor area is 467,000 square feet, or about 10½ acres, while the old Post Office has but 158,000 feet. The cubic content of the building is about 9,000,000 feet.

Having had experience of several methods of procedure in regard to reinforced concrete work, Sir Henry Tanner said he could come to no other conclusion than that the method pursued in the case of the new General Post Office is by far the best. It was of the greatest possible advantage that the architect and the engineer should be able to work together, and this cannot be done when designs and tenders are called for. Besides, it is obvious that with such procedure, if the engineer and his contractors are to hope for any success in competition for work, the steel and concrete must be cut down to the minimum, thus increasing the chances of failure. Much time is lost in the necessary examination and comparison of the designs submitted, and this, with vacant sites, means the loss of more or less money. Such a course is not taken with ordinary steel construction, and it is not usual to ask architects for designs and tenders which would practically amount to the same thing. Moreover, under such a system it is impossible to obtain a satisfactory schedule from which variations can be properly valued.

The time must come when reinforced concrete will be incorporated in the ordinary bills of quantities and dealt with in the same way as any other part of the construction, and there are now any number of contractors quite able and willing to undertake and to carry out such works in a satisfactory manner.

With regard to materials, cement can now be regularly obtained to take a stress of 20 per cent. greater than the British standard, and this should be taken into consideration. Such cement was used throughout the G.P.O. building and in the test blocks.

In regard to expansion and contraction, these were only observed when the building was considerably advanced, but without windows and internal warmth, and therefore entirely exposed to the outside temperature. In January 1909 there was a severe frost, and contraction was evident at the eastern end of the bridge, and in the sub-ground floor at the rear of the front building, but on the return of warmer weather the fractures closed, and have not caused any trouble since the building has had the windows in and been otherwise protected. No special provision was made for expansion and contraction, and no movement has been observed in the area of floors.

Supervision is of the first importance, and this is necessary during the whole time that concrete is being mixed and deposited, and before the latter is done it is absolutely necessary to see that wood shavings, sawdust, &c., are re-

moved from the false work, and hosing is very useful for this purpose. The positions of the steelwork must be observed, as any loose parts may get out of position; column links are particularly open to this, and such loose parts should be tied together with binding wire. To ensure so far as possible the accurate carrying out of the work in this case, three Clerks of the Works were employed during the greater part of the time.

Lieut.-Col. Sir M. NATHAN, G.C.M.G., opened the discussion with a vote of thanks to the lecturer. Some forty years ago, he said, Sir Henry Tanner joined the Office of Works, and it is twenty-five years since at York his first post office was erected. For twelve years he prepared the designs of every post office building of importance, and during that time the leading characteristic of his relations with the department was his willingness to meet all their requirements when he was told of them. He always realised that a building should be arranged for the work to be carried out in it, and not the work suited for the building. In other words he was a first-rate planner. His excellent planning was evident from many buildings, including the Mount Pleasant office, and in the big block erected a few years ago in West Kensington for the Savings Bank. The great feature of the new General Post Office was the boldness in having applied a comparatively new system to a structure bigger than anything to which it had been previously applied—at any rate in this country. The details recalled to the speaker an experience of his own when as a subaltern in India he was called upon to design and construct a heavy gun battery on a very treacherous foundation. He designed a raft of concrete; and as it was essential there should be no settlement of any part of their foundations he decided to embody a large number of contractor's rails. It was a very far cry from that rudimentary idea to the elaborate arrangement described in the paper, which was the latest achievement in architectural engineering. They in the Post Office service hoped that the achievement would be followed by many other buildings designed by Sir Henry Tanner, and they hoped that all would be as successful.

Mr. H. D. SEARLES-WOOD remarked that the architectural profession at large were very much indebted to Sir Henry Tanner for the way in which he had allowed the General Post Office to be inspected. It had been a most educational building during the past few years.

Professor BERESFORD PITE considered that the new General Post Office had completely justified the confidence felt by the profession as to the works carried out by the Office of Works, and their belief that the interests of the nation, so to speak, were in entirely satisfactory hands. While they might have felt some amusement at the way in which Sir Henry was able to treat the London Building Acts, there was never any doubt about his ultimate success. To have had an opportunity of conducting an experiment of this sort and of carrying it to a success was the crowning-point of a successful career. The new post office will form a landmark in the history of English building construction and will establish Sir Henry Tanner's reputation. The possibilities of expansion and contraction with such an homogeneous building seemed to him somewhat serious. Mention was indeed made in the paper of one spot where contraction was noticed. The question became a matter of some importance if English architects began to consider the advisability of employing a ferro-concrete system in a hotter climate than their own. The gigantic letter-box under discussion had comparatively no architectural interest apart from its structure. It does not stand as Sir Robert Smirke's building stands, as the last expression of an æsthetic movement, for the elements of architectural interest have not entered into it. It would be regrettable if anything in the future were done to in any way deprive the City of the solemn and spacious Greek front at St. Martin's-le-Grand. The two represent different ideals and a different sort of architectural training. Food for thought is offered when one considered that the occasion will arise when something more than ferro-concrete construction will be demanded, something calling for a high artistic ideal founded upon antiquarian study.

Sir ASTON WEBB, R.A., congratulated Sir Henry Tanner very much on the building. It was a perfect revelation of the change in the ways. If architects in general are to carry out what Sir Henry carried out they will have to revolutionise all their ideas of building construction. It was a wonderful achievement and a wonderful paper, and the Institute was greatly indebted to him for giving all the information. It was to be hoped that next time Sir Henry was designing such a work he would be able to carry out his building to the street. It is obvious that eventually that

Messrs. WILLS & ANDERSON also show an indirect approach to Northwood Station. Their plan has many good practical points, with due regard for contours, but is not pretty enough for this competition.

Messrs. HARVEY & HARVEY give full respect to the contours, especially in the Copse Wood area, but although they provide a good civic centre their main roads straggle unduly.

Mr. E. C. P. MONSON has a through route with a central park and two shopping centres with radiating and concentric roads. We fancy some of his gradients in the Copse Wood area are rather steep.

Messrs. LOVELL & BULMAN make a bold attempt at symmetry, but there are too many parallel roads running east and west.

Messrs. EDWIN T. HALL & E. STANLEY HALL have cleverly combined a sinuous main road with a symmetrical plan employing elliptical parallels, and they have had full regard for contours. The plan is perhaps scarcely of a sufficiently garden-city character. This is one of the few designs illustrated by a good bird's-eye perspective.

Messrs. COURTAULD & COLDWELL have rather a good plan, but not organic enough.

Messrs. PEPLER & ALLEN have adopted a winding main road with shopping centres upon it, but their plan is rather sprawling. They have adopted a serpentine disposition of roads in the Copse Wood area which fits in well with the difficult contours.

Mr. F. SELBY has a good main thoroughfare through the estate, leading to a square in which are placed council offices, public hall, and library, and from which are radial roads. He has a good connection from the north of the Park Wood area to Northwood Station.

Messrs. WILLIAM H. THORP & SON have produced a pretty plan, but a disregard of contours results in some difficult gradients.

Mr. ARNOLD S. TAYLER similarly reaches the same result from the same cause in attempting a symmetrical plan.

Messrs. WOOD & HENDERSON have achieved symmetry, but show too large a proportion of houses with north and south aspects.

Messrs. R. S. AYLING and C. G. BOUTCHER, with Messrs. M. A. PIERCY and C. BOLLAM, have adopted the idea of a bridge across the reservoir, but by thus connecting the Copse Wood and Park Wood areas render indirect the approach to Northwood Station. A disregard of contours results in a road gradient of one in eight.

Although Messrs. PERCY B. TUBBS and L. A. DUNNINGTON have given due consideration to contours some of their sewers seem to run uphill.

Mr. W. H. ANSELL has taken the bold step of suggesting a new station at Ruislip, which would scarcely meet with favour.

Although we have criticised somewhat severely the selected plan, we recognise that it has many good points, and its faults are not irremediable. As will be seen from our illustration, it is distinctly of the modern American rather than the German school. Its execution obviously requires a scheme under the Housing and Town-Planning Act to conserve its symmetry and pretty pattern, and in this respect fits in with the intention of the Ruislip-Northwood Urban District Council to frame a scheme for a town plan of between 3,000 and 4,000 acres, but this scheme must start from the Ruislip Manor plan.

We are indebted to the directors of "Ruislip Manor, Ltd.," for permission to publish illustrations of the premiated plans.

THE Swansea Harbour Trust have adopted a report from Mr. A. O. Schenk (the engineer), on the damage done by the recent storm to the parapet wall of the King's Dock sea embankment, and recommending the carrying out of repairs, and of the construction of works necessary for preventing further damage from the wind and sea. The estimated cost of the works proposed is from 14,000*l.* to 15,000*l.*, and the contract has been given to Messrs. Topham, Jones & Railton, the contractors for the construction of the dock.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AN ordinary general meeting of the Royal Institute was held on Monday last, Mr. Leonard Stokes, President, in the chair. The decease of the three following members was announced:—F. W. Peel (Fellow), C. Ashton Callon (Associate), and F. W. Roper (Associate). Sir Henry Tanner, I.S.O., F.R.I.B.A., was then called upon to read his paper on

The New General Post Office.

In 1904 part of the site of Christ's Hospital between King Edward Street and Giltspur Street, amounting to 3½ acres, was acquired from the Governors for the purpose of erecting buildings to cope with the constantly increasing business at the old General Post Office. After mature consideration the conclusion was arrived at that reinforced concrete construction was excellently adapted for the purpose, and would economise both space and money, having in view the fact that Government buildings are exempted from the operation of the London Building Acts, and that therefore full advantage could be taken of the new methods. Upon going into the matter of cost as carefully as possible, it was found that if built in the ordinary way with steel construction the approximate cost, exclusive of fittings, &c., would be 355,000*l.*, but if in reinforced concrete 295,000*l.* would probably suffice. The latter figure has proved to be correct, so that there has been an approximate saving of 60,000*l.*, and apart from this considerable space has been gained, due to the great reduction in wall thicknesses. The cost per foot cube of the reinforced concrete structure was about 2½*d.* The sum of 295,000*l.* is exclusive of engineering work, such as heating, lighting, lifts, telephones, conveyors, &c.

In February 1906 the Commissioners of Works agreed to adopt the Hennebique system, and to the employment of Mr. L. G. Mouchel to act as consulting engineer to collaborate in the preparation of the first contract, which consisted of the excavations, reinforced concrete work, and so much general work as was necessary to render the building watertight, but with the exception of the Portland stone fronts. In March 1907 a commencement was made by Messrs. Holloway Bros.

The sorting office or main block consists of six storeys, and the public office in King Edward Street of seven storeys; inclusive in each case of a basement floor and a sub-ground floor. It was stipulated that the interior columns were to be as few and as small as possible, in order to give the largest practicable unobstructed areas, that the beams were to be of the minimum depth, that there must be a bridge of 50 feet span connecting the two buildings at the second-floor level, and that two subways were to be constructed under King Edward Street, connecting the new building with those existing. The superloads were fixed after experiment at 1 cwt. for the ground floor and ¾ cwt. for the remaining floors, 65 lbs. for the roof, and the factor of safety at 4.

The excavation was of considerable dimensions and some 30 feet deep. Digging was commenced at King Edward Street, as also was the building, and work progressed to the westward. A portion of the old London wall ran through the site. It was impossible to save it, except a portion under the western yard, without sacrificing a large portion of the two lower floors. In addition there were the very heavy and solid foundations of Christ's Hospital, and even earlier buildings, and blasting had to be resorted to.

In order to construct the main beams and allow for the extension of the bars into the adjoining beams, the excavations had to be of great width, and the sides were supported by timber piles and heavy timbering. The work proved reasonably watertight; nothing whatever has passed through the retaining walls, which average 7½ inches thick. There is no asphalt lining, but ordinary cement concrete, 8 to 1, several inches thick was used for filling up the space occupied by the false work at the back of the walls. Some trouble was, however, experienced in keeping the ducts dry where the building was on the clay. This difficulty has, however, been overcome by forming two sumps and taking a drain from them into the outcrop of the gravel.

The second contract consisted of the Portland stone and granite work, and the third contract the remainder of builder's work, including internal brick divisions, joinery, plastering, tiling, sanitary work, painting, &c. These two contracts were also carried out by Messrs. Holloway Bros.

Experiments were made with various plastering materials for internal work, and as a result a rendering of Portland cement and sand, finished with Keene's, was used. This so far has proved quite satisfactory, and except for the ceilings in the offices above the public office, which have been distempered, the whole has been painted with enamel finish.

The wall tiling of glazed fireclay ¾ inch thick begins from

must happen, and the building will have to be treated as a street frontage. Sir Aston said he was sorry (for some reasons he was also glad) that he was not the young man to have to do it. He trusted that Sir Henry Tanner would have an opportunity of showing how this concrete building can be continued forward and honestly turned into architectural effect. In Paris very successful façades have been of concrete. It should act as a great incentive to modern young men to know that there is this problem of employing this material and giving it an architectural character. How it was to be done he himself did not know. He had, in conclusion, great pleasure in joining his thanks to those of the rest of the audience to Sir Henry Tanner for his able paper, which would be one of the epoch-making ones in the history of the Institute.

Mr. MAX CLARKE described the new General Post Office as undoubtedly the greatest object-lesson of ferro-concrete work in the United Kingdom. It was particularly useful at the present time when the regulations for ferro-concrete were under consideration. Of course, Sir Henry Tanner was able to do a great many things which it could not be anticipated would be allowable to ordinary architects designing non-Government buildings. It appeared to be a most remarkably cheap building. The architect was to be congratulated on his audacity in calculating the superload for the ground floor at 1 cwt. The best thing in designing such a structure seemed to be to pay no attention to the London County Council regulations. He would like to ask why Sir Henry had adopted a calculation with regard to the cement different from the British standard specification. And did his alteration apply absolutely to ferro-concrete? An ordinary architect in such matters is bound to adopt something which people who know more about that particular subject than himself agree upon. Most architects so regard the standard specification. Yet here they were told about a large and important building which had no reference to it. He would also like to know whether the concrete was put in wet or dry, because whereas it was quite a simple matter to put in dry concrete when the rods are close together, it is more difficult when they are not. Emphasis had been rightly laid on the extraordinary amount of care necessary to prevent wood chips and shavings getting into the columns. The Kodak Building in America fell because wood was allowed to destroy the cohesion. There seemed, on the whole, a considerable amount of luck in ferro-concrete work, and luck had favoured Sir Henry Tanner.

Mr. KNIGHT spoke of the importance of fineness in the cement used for reinforced concrete building, and also of the high value of the crushing test of concrete. He hoped that in his next building of this class Sir Henry Tanner would give them an elevation of reinforced concrete. It was a material with which a design aesthetically as sound as in any other material could be carried out. If Sir Henry Tanner had done this it would have been even more than now an epoch-making building.

Mr. J. E. FRANCK thought that Sir Henry Tanner was to be congratulated on having a board who would carry out his wishes. The Royal Institute were also to be congratulated on their report on reinforced concrete, which has been of very great advantage to engineers, as it can be taken about and easily referred to. The late Mr. L. G. Mouchel was a very able engineer, and a pioneer of reinforced concrete in this country; in addition, he was a very genial companion. It was regrettable that he was not alive to see how his system had been carried out. In this country there had been a dangerous tendency to regard concrete as something which need not be made by skilled labour.

Professor H. ADAMS pointed out that in considering the low cost it should be remembered that it was of a building practically without a frontage. The structural advantages of reinforced concrete had been clearly shown. The material had so far made more headway in engineering construction than in architectural work. But when architects are able later to give closer attention to the subject they will no doubt use it more. On the face of it, the material seemed unpromising, but it was a legitimate one.

Mr. H. H. STATHAM said he had been inspecting the building that day, and, among other things, had noticed that one part of the building had been treated architecturally in concrete. There was a cornice with its modillions, &c., just as it would be in a stone front. It appeared to him, however, that in the future they ought to give up imitating the forms of masonry.

Mr. DE VEZIAN, speaking as an assistant of the late Mr. Mouchel, expressed regret that his chief was not alive to be present at the meeting. In alluding to doubts raised as to the effect of expansion and contraction, Mr. De Vezian

said he thought they need not have any fears as to the effects of variation in temperature.

Mr. LEONARD STOKES closed the discussion by putting the vote of thanks to the meeting. They would all wish, he said, that such an opportunity as the new General Post Office could come to each of them. That building had been erected under considerable advantages in its independence of that bugbear the London Building Act. He had been interested in the thinness of the floors, for his own experience of ferro-concrete was that it carried sound tremendously. He was also interested in seeing the chimney stack had also been carried out in it, for the only instance of the kind he knew of was giving a vast amount of trouble. They all hoped that some one will think of a new method of making a pleasing and sensible design in this new material.

Sir H. TANNER having briefly replied to the points raised, the meeting closed.

The PRESIDENT announced that the next meeting will be held on Monday, January 16, when Mr. Halsey Ricardo will read a paper on "Cardinal Medici's Pleasure House," and the Award of Prizes and Studentships will be announced.

ILLUSTRATIONS.

THE CHOIR, COLOGNE CATHEDRAL.

THIS illustration is from an etching by Mr. LAURENCE DAVIS, in communication with whom we shall be pleased to place any of our readers who may desire a copy of the original.

BROCKHURST, EAST GRINSTEAD, SUSSEX.

THIS house was originally a cottage, and has been added to and altered at various times. The present alteration, completed at the beginning of 1909 for Mr. F. J. HANBURY, consisted of an enlargement of the dining room, new staircase, the provision of a chapel, a museum, and various other minor improvements. The garden front, originally a mixture of stone, tile hangings, and half-timber work, was found to be in a very bad condition, and has now been practically refronted in stone without otherwise altering the appearance of the house. The windows have been reglazed with metal casements and leaded lights, and a stone-paved terrace and wall built of local stone replaces the original grass bank. Messrs. HOLLOWAY BROS. were the builders, and the oak joinery was also made by them. The ornamental plaster work was modelled by Mr. STEPHEN WEBB, under the architect's direction, the motif for that in the dining room being the orchid, of which flower Mr. HANBURY is an ardent collector. Mr. STEPHEN WEBB also made the models for the oak carving in the chapel from the architect's drawings; Mr. MORRISON was the carver. The casements and lead lights were made by Messrs. WM. MORRIS & Co., and the ironmongery by Messrs. N. F. RAMSAY & Co. The architect was Mr. MAURICE E. WEBB, M.A., son and partner of Sir ASTON WEBB, C.B., R.A.

TRAVELLING STUDENT'S SKETCHES.

WE have pleasure in reproducing two of the sketches made by Mr. CHAS. HENRY WALSH, the first holder of the travelling studentship given annually in connection with *The Architect Students' Sketching and Measuring Club*. We shall publish further drawings by Mr. WALSH in subsequent issues.

CANADIAN ARCHITECTURE.

IN the Dominion of Canada there is even less of anything that can be called ancient architecture than is represented by the "Colonial" period in the United States. Our *confrères*, therefore, have had to start *ab initio*, and anything approaching a general national treatment is still in the future. Thus Canadian architecture of the present day is based upon an eclectic use of motifs borrowed from Europe, or from such modifications of European work as may be found in the United States.

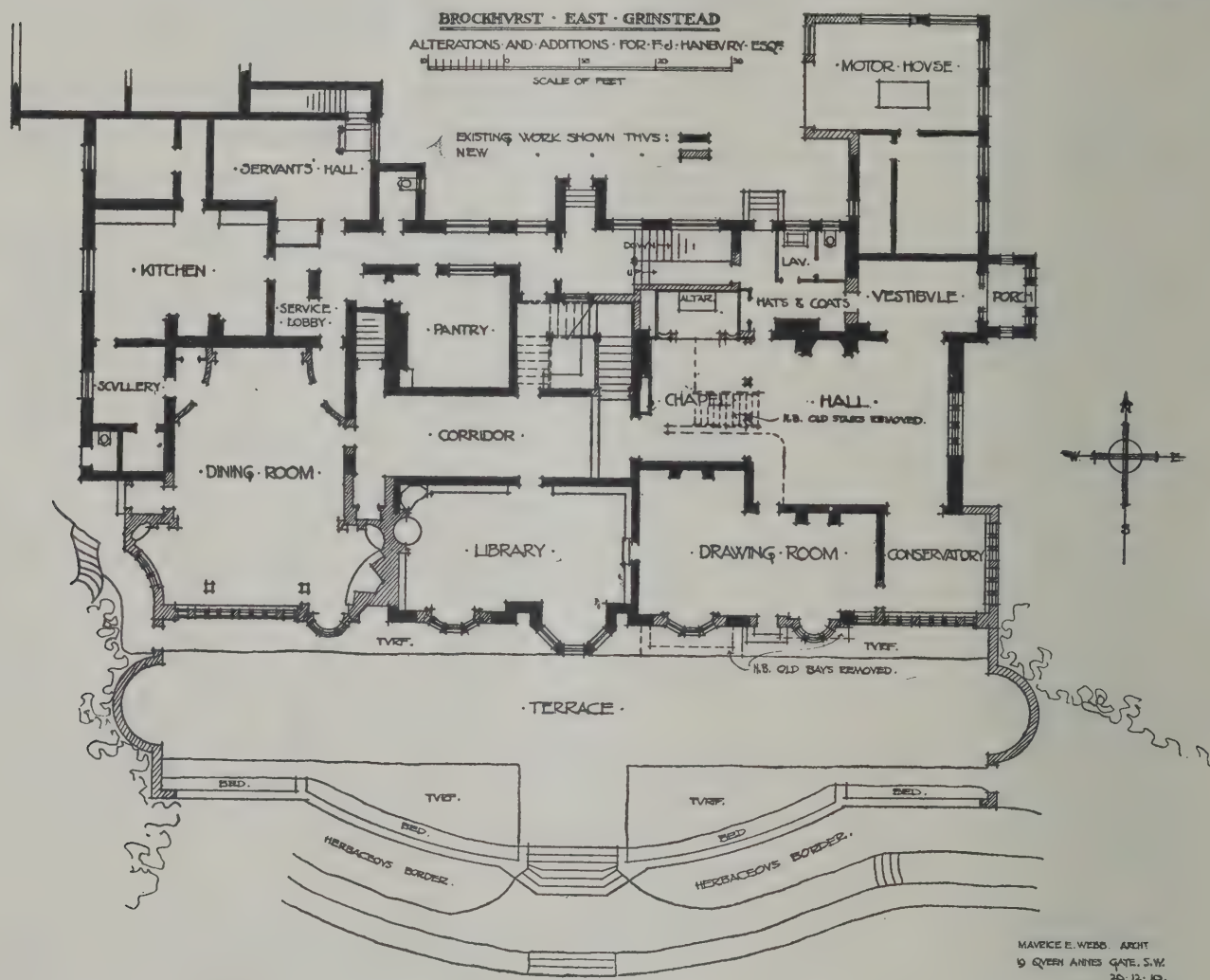
As regards public buildings, our brethren in Canada have suffered from three adverse influences: first, an undue preference given to some of the well-known architects in the States over those in the Dominion; second, a

disposition to entrust public work to official employés, rather than to architects in independent practice; and, third, to undue haste on the part of their employers in the phenomenally rapid development of the country, which has not left the architects sufficient time for proper consideration of their designs for monumental buildings. Hence up to the present Canadian architects in the matter of great works have scarcely had a fair show.

With domestic architecture the case is quite different. Many Canadian architects are to-day designing houses, both large and small, that worthily hold their own, in originality, in comfort and in beauty with the best class of work to be found either in England or in the States.

In the matter of building material, the development of Canada's natural resources has not kept abreast of the demand, and much has therefore been imported from the States; but there is in the Dominion no lack of brick earth and fireclay, either in the Maritime, the Central or the Western provinces, whilst the stone and marble of Canada are so excellent that they find a market even in

there a nunnery for his saintly daughter FRIDESWYDE. The nunnery was converted into a house of the Austin Canons in 1004. Upon the same site in 1525 the foundation-stone of Cardinal WOLSEY's college was laid. The Cardinal presumably hoped to avert any odium which might arise from his suppression of this Priory along with twenty-one other religious houses by dedicating his "Cardinal College" to the HOLY TRINITY, the VIRGIN MARY, St. FRIDESWYDE and All Saints. The first work to be finished was the noble kitchen, 40 feet square, with its three fireplaces. The same lordly scale was preserved throughout. The Tom Quadrangle is the largest in Oxford, being 264 feet long by 261 feet wide. The south range of buildings, including the superb hall and kitchen, together with the greater part of the east and west ranges, was completed before WOLSEY fell into disgrace four years later and his College became forfeited to the Crown. The north side was to have been occupied by a great chapel, to make room for which three westernmost bays of the cathedral and the west side of the cloisters were demolished. But the work ceased when the



Europe. Development of production and of transport is alone needed to make Canada independent of external sources for building material in the near future.

There appears to be a tendency in the Dominion for a parallel to the existing conditions in the States—the growth of large practices, confined to a comparatively small number of firms, employing what in England would be considered colossal staffs of assistants.

We illustrate this week some of the buildings of one of the leading firms in Toronto, Messrs. DARLING & PEARSON.

OXFORD COLLEGE SERIES.—CHRIST CHURCH. EXTERIOR—QUAD.

THE St. Aldate's front of Christ Church, with its famed Tom Tower in the centre and two heavily projecting wings or bastions at each end, is one of the most conspicuous features of Oxford. The College can trace its history almost to the advent of Christianity into that part of England. In the eighth century Prince DIDAN erected

walls had reached six or seven feet above the ground. In 1546 the College was reconstituted by HENRY VIII. About a hundred years later the quadrangle was completed under JOHN FELL (Dean 1660-86), by the erection of the Dean's lodging and other rooms on the north side, the provision of a raised terrace by excavating the centre area, the lengthening of the St. Aldate's façade northwards, and the addition of a tower from WREN's designs over the entrance. In the tower was hung "Great Tom," which had been brought to Christ Church on the suppression of the cathedral church of Oseney. "Mighty Tom" has played an important part in Oxford undergraduate life since it was first tolled at 9 p.m. on May 29, 1684, for its one hundred and one strokes are the signal for the closing of the College gates. The remainder of the peal, seven in number, are hung in the bell tower, designed by Mr. BODLEY some thirty years ago, over the hall staircase. We hope to give a fuller account of Christ Church College, by Professor HAVERFIELD, in the course of a week or two.

THE ILLUMINATION OF INTERIORS.

By Professor J. T. MORRIS, M.I.E.E.

THE subject of illumination is one with which everyone is so familiar, or imagines himself so familiar, that at first sight an article on the subject may seem superfluous. But in reality there are few subjects about which so many mistaken ideas prevail. It is in the hope of drawing attention to some of these that this article is written.

PART I.

DAYLIGHT ILLUMINATION.

If a brilliant lamp be placed on a table immediately in front of ordinary reading matter, and the latter be read with the direct rays of the lamp full in the eyes, it is well known that the print, though legible, is only read with difficulty. The eye feels strained, and there is a natural instinct to screw up the eyelids to reduce the dazzling effect of the light. On the other hand, if the light be placed on one side and screened, or, better still, if it be allowed to shine over the shoulder, the print can be read with ease. In the first case the matter must have been illuminated much more brightly than in the second; yet the latter is much more satisfactory.

This shows how important it is that the source of light, if bright, should be out of the field of view of the observer, if reading or other occupation involving close scrutiny is to be done with comfort. At all costs let us

until a few years ago there was no really simple and reliable method of measuring daylight. Much of our present knowledge of illumination and its measurement is due to Mr. A. P. TROTTER, Electrical Adviser to the Board of Trade; Mr. P. J. WALDRAM has also worked in this field. Some of Mr. WALDRAM's results, and others obtained at the East London College, on the light coming from the sky and the proportion of it which enters through the windows of different rooms, are of great interest. This proportion will, of course, depend largely on the situation of the windows, colour of surrounding buildings, &c.; but, as will be shown later, it is a somewhat remarkable fact that for any particular room the ratio is fairly constant throughout the whole of the day.

If one were to hand a sheet of printed matter to a person and ask him to examine it first in an averagely lighted room and afterwards out in the open, and then ask him to state what he considered was the ratio of illumination outside to inside, it is probable that as a generous estimate he would say that the light was ten times as bright outside as in. As a matter of fact a nearer figure would be 100 to 2,000 times. If the person in question had some knowledge of photography he would know how much longer is the exposure and larger is the "stop" required for inside work. But it is doubtful even then whether he would guess anywhere near the huge figures given above.

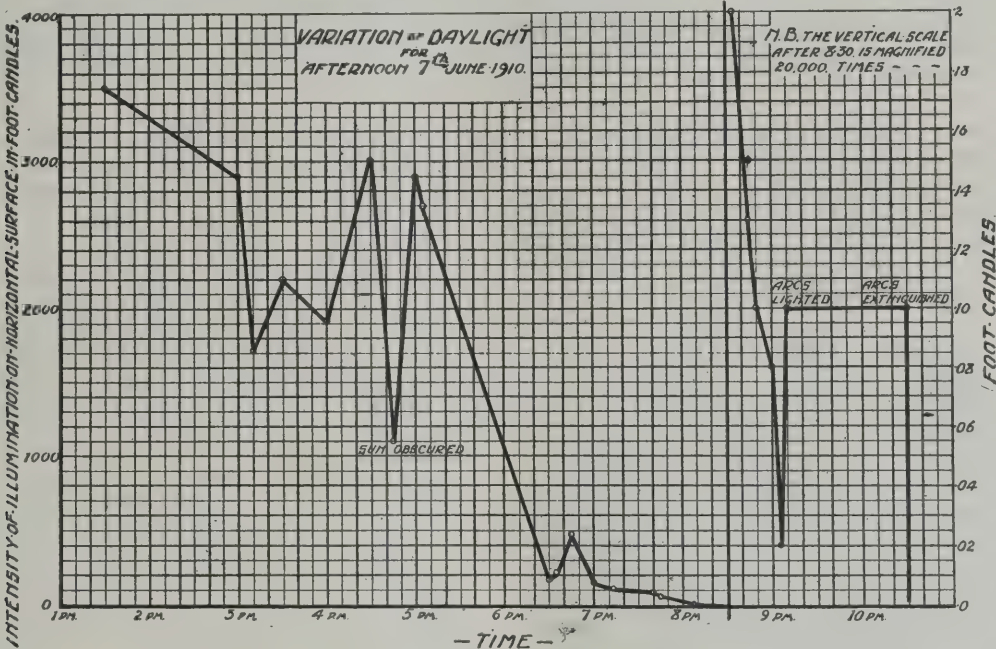


FIG. 1.

get rid of the idea that if we "can see somehow" we can get along, because this usually means that the eye will be strained either by excess or insufficiency of illumination.

To make an accurate study of illumination it is necessary to fix a unit of measurement. This unit or standard is called 1 foot-candle or candle-foot—that is, the illumination which is produced on a surface at one foot distance by a source of light emitting one standard candle. At twice the distance it becomes one-quarter foot-candle; at three times the distance it is one-ninth foot-candle; and so on.

Light is in general required for the purpose of seeing something else, as distinct from a few special cases, such as illuminations, fireworks, &c., where the light forms a part of the spectacle. From what has been said above it will be seen that it is very desirable to arrange that all lighting should be done on the indirect system, i.e., arranged so that the lamps cannot themselves be seen. This can be done with inverted arcs, but such methods, except in special cases, are too wasteful for ordinary purposes.

Both candle-power and illumination are comparatively easily measured in a properly equipped laboratory, but

Another important point is the wide fluctuation which takes place in the light during an ordinary day; the eye is only capable of following these variations to a limited extent, and, as will be shown later, is a very poor guide with which to judge illumination. Fig. 1 shows a curve drawn from observations made in the East London College during the afternoon and evening of June 9, 1910. Table I. is a record of the readings taken.

TABLE I.

Variation of outdoor illumination in foot-candles during the afternoon of June 9, 1910:—

Time.	Reading (in Foot candles).	Time.	Reading (in Foot candles).
1.30 P.M.	3,500	7.15	110
3. 0	2,900	7.40	80
3.10	1,700	7.45	72
3.30	2,200	8. 7	13
4. 0	1,900	8.30	1.1
4.30	3,000	8.35	0.2
4.45	1,100*	8.45	0.15
5. 0	2,900	8.50	0.10
5. 5	2,700	9. 0	0.08
6.30	170	9. 5	0.02
6.35	210	9.10	0.10†
6.45	470	10.30	0.10
7. 0	150		

* Sun obscured.

† Arc lamps lighted.

Most of the fluctuations which, it will be observed, took place during the early part of the afternoon, were due to passing clouds. This subject has been specially investigated by Mr. WALDRAM, and some of his results have been published in the *Illuminating Engineer*. He has compared the various intensities under different conditions and has arranged them in the following order of decreasing brightness:—

- (1) Thinly overcast sky with no blue.
- (2) Clouds predominating.
- (3) Blue predominating.
- (4) Cloudless, either clear blue or hazy.
- (5) Dense clouds, no blue sky, no sun.

From fig. 1 it will be seen that the maximum illumination observed was 3,500 foot-candles, which, after some fluctuations, had dropped by 6.30 P.M. to one-twentieth of its value at midday, while at 8 P.M. it had diminished to such an extent as not to be recognisable on the curve drawn to the original scale. The light continued to fade till about 9 P.M. it had reached a value 0.02 of a foot-candle, in comparison with 3,500 foot-candles at midday. At 9.10 P.M. the arc lamps in the grounds were lighted, and the illumination rose to 0.1 foot-candle. It was found when making these tests that very few of these wide variations in intensity can be distinctly observed by the unaided eye unless they amount to changes of several hundred per cent. This is chiefly because they take place gradually. Calling the maximum intensity of illumination necessary for telling the time by a watch unity, an illumination 10,000 times as great would still not seem dazzling. Such facts as these demonstrate the remarkable adapting power of the eye. It is very doubtful whether any other organ of sense is capable of encountering without injury or discomfort such wide ranges.

Turning to the question of window efficiency, we meet with the striking fact that the ratio between the intensity of illumination measured in a room and that of the sky remains fairly constant. Table II. shows some results obtained at the East London College:—

TABLE II.

Time.	Internal.	External.	Ratio	Internal External	Illumination.
7.0 P.M.	1.46	750.0		0.0020	
7.20	1.42	570.0		0.0025	
7.40	0.78	380.0		0.0020	
8.7	0.16	63.0		0.0025	
8.30	0.03	5.5		0.005	
10.0	0.55	Artificial illumination.			

These figures were obtained inside the Electrical Engineering Laboratory of the College. The readings are in foot-candles. That taken at 8.30 P.M. is rather below the accurate range of the instrument, and consequently the value of the ratio 0.005 is not very reliable. The ratio obtained in this test is about the average for a well-lighted room, which, as a rule, has an illumination intensity of $\frac{1}{400}$ th to $\frac{1}{500}$ th of the external value.

The following figures given by Mr. WALDRAM for several well-known buildings are interesting, and although comparable with one another, in order to give absolute values, in the author's opinion they should be multiplied by a constant whose approximate value is 5. This matter is dealt with at greater length below:—

TABLE III.

$$\text{Ratio} = \frac{\text{Inside Illumination}}{\text{Outside Illumination}} \times \text{Constant.}$$

New Elementary Schools, desks	. . . . .	{ 0.0025
Ordinary offices, average	. . . . .	{ 0.008
British Museum—Reading room	. . . . .	{ 0.001
Patent Office—Library	. . . . .	{ 0.007
" Reading alcoves	. . . . .	{ 0.0007
Royal Courts of Justice—Central hall	. . . . .	{ 0.008
" " Courts	. . . . .	{ 0.0012
House of Commons—Speaker's chair	. . . . .	{ 0.0007
" " Members' seats	. . . . .	{ 0.0022
House of Lords—Woolsack	. . . . .	{ 0.0009
" " Members' seats	. . . . .	{ 0.0003
" " Central hall	. . . . .	{ 0.0007
Charing Cross Station—Booking hall	. . . . .	{ 0.0004
		{ 0.0006
		{ 0.0015
		{ 0.0001
		{ 0.0003

These ratios will remain fairly constant, whether it be bright or dull, full daylight or dusk, providing there is no direct sun on the windows.

The ratio just discussed depends largely upon that of window area to floor area. It may therefore be of interest briefly to examine what regulations have been laid down on this point. In the London Building Act of 1904 it is specified that the minimum window area allowed in a habitable room is one-tenth of the floor area.

The Board of Education building regulations (1907) specify a minimum for new schools of one-fifth of the floor area in the class-rooms, and for other rooms not less than one-eighth. The illumination must, further, be from the left-hand side of the scholars, or, where this is impossible, from the right-hand side. Lighting from the front is not permissible. It is a significant fact, however, that nothing is said about artificial illumination.

It is with the object of removing the widespread ignorance which exists as to what constitutes satisfactory illumination under greatly varying conditions—in a word, of putting illuminating engineering on a scientific basis—that the Society of Illuminating Engineers was formed with Professor S. P. THOMPSON, F.R.S., as its first President. In this society engineers, architects, medical men, and others are able to discuss these important problems in an impartial manner.

Returning to the subject of the ratio of internal to external illumination, it must be remembered that this ratio will be at once altered should any great change be made in the general colour of the interior of the room. It is common knowledge that the laying of a white tablecloth brightens up a room. The colour of the wall-paper, too, has a most marked effect, and many people who blame the architect for the bad lighting of a room are often themselves responsible because a dark coloured paper was chosen for the wall decoration.

(To be continued.)

ROWALLAN CASTLE.

ROWALLAN is situated about three miles north-east from Kilmarnock, in the county of Ayrshire, Scotland. It forms one of the many interesting examples which remain of Scotch baronial work, although, perhaps, it is not so very well known.

It is beautifully situated on a rocky knoll in the estate recently acquired by Cameron Corbett, Esq., M.P., with a clear, flowing stream in front and well wooded surroundings, and is quite near the new mansion house built by Mr. William Lorimer, architect, Edinburgh.

The house is a fine specimen of the Scottish mansion of the sixteenth and seventeenth centuries, and although quite national in its characteristics it does not bear the usual features which mark others of its class. It has nothing of the overhanging effects produced by corbelling, and little or nothing in the way of turrets, so common at this period.

The front elevation, which faces the east, has two bold drum towers which form conspicuous features. Leading up to the small arched doorway, which is flanked by the towers and forms the main entrance, is a straight flight of twenty-two steps, which form a dignified entrance to the building. The arched doorway leads through a passage into a courtyard, of which the building forms three sides.

In a panel over the main entrance are the Royal Arms and supporters, with the Mure Arms beneath, the detail of same now being somewhat lost. Above this panel is a carved head, probably intended for a "Moor's head," the crest of the family.

The bosses, string courses and mouldings of the front elevation, carved with cable ornaments and imitation gargoyles, are characteristic of the period in which they were built—1567.

There is very little of interest to be seen now internally, since most of the old woodwork has been removed. The private room or hall, has an interesting little cupboard called the "Ambry," fixed to the scuntion (on the south side) of the window at the south-east angle. It displays some very fine work in the way of old Scotch detail. There is a similar cupboard on the other scuntion, but it does not call for any comment. In this same room there is also a wood screen which displays fine workmanship and design.

"ROWALLAN CASTLE"



From a Drawing by Mr. W. A. ROBB.

"THE ARCHITECT" STUDENTS SKETCHING AND MEASURING CLUB.

The fine entrance gateway to the courtyard was built by Sir William Muir, who succeeded in 1657, and died in 1686. Over this gateway there is a shield which bears his monogram intertwined with that of his wife, Dame (Elizabeth) Hamilton. There were doubtless enclosing walls extending to the stream, of which only the fragment containing the gateway remains.

The present castle is supposed to have been built on the site of the original fortlet, which was of a much earlier period. It is recorded in the "Historie" that Gilchrist Moir, for the reward of his services to the King Alexander at the battle of Largs, in 1263, obtained the "heretrix" of Rowallan, "and bair in his airmes ye bludy heid. . . he biggit ye auld tour of Rowallance, and put his armes yair."

It was the birthplace of Elizabeth More, or Mure, first wife of Robert II., from whom our Royal family are descended, and the residence of Sir William Mure (1594-1657), a member of the parliament that met at Edinburgh in 1643 to ratify the Solemn League and Covenant; and a poet of considerable note in his day. Part of the house still bears the name of the "Auld Kirk," from the religious meetings that took place in his time.

POST-AND-PLASTER BUILDINGS IN CHESHIRE.

THE revival of "black-and-white" in modern buildings recalls the magnificent examples that are still left to us for admiration and suggestion.

To see our choicest gems preserved as of yore, we must hie away to the great Cheshire plain. Here the landscape is studded with examples which abound in interest for the architect and builder. No effort is spared to make good any damage wrought by wind and weather; the snowy-white and jet-black are replenished as the seasons come and go.

Among these relics of antiquity Little Moreton Hall, near Congleton, stands unequalled. Constant care has saved this pile from destruction. Many times have the timbers threatened and the floors quivered, but a prompt supply of struts, wedges and binders has saved the hall, and it bids fair to defy the storms of many winters.

This old home of the Moretons rears its lofty ridge above the corn fields and provides a magnificent landmark. It retains the moat of 400 years ago, spanned by a stone bridge leading to the gate-house. The islet on which the hall stands is square, with sides about 20 yards in length. The

archway is reminiscent of sixteenth-century days, when pillars of oak with carved capitals found great favour in the shires of the North. The fine panelling of the doors strikes our attention from the first. But the glory of Moreton is revealed when we enter the pebbled courtyard. Ever



THE LONG GALLERY, LITTLE MORETON HALL.

and anon we wonder where most grandeur lies. It is in the octagonal bays on the east side that admiration centres generally. Of these there are two, each of two storeys, abutting on the great hall and drawing-room, and each having



THE FAMOUS BAYS, LITTLE MORETON HALL.

three gables with painted quatrefoils. The upper storey gives a tangible clue to the age of this part of the hall. It bears the inscription in capitals:—

"God is al in al thing
This windovs whire made by William Moreton
In the yeare of oure Lorde MDLIX."

The lower storey is headed thus:—

"Rycharde Dale Carpeder made thies
Windovs by the grac of God."

centuries ago. The kitchen and bell-cot stand to the west. This block is remarkable for the private room which projects from the main part of the building. Little Moreton had several of these closets used for meditation, prayer, and seclusion. The bell is tolled on Saints' days, when divine

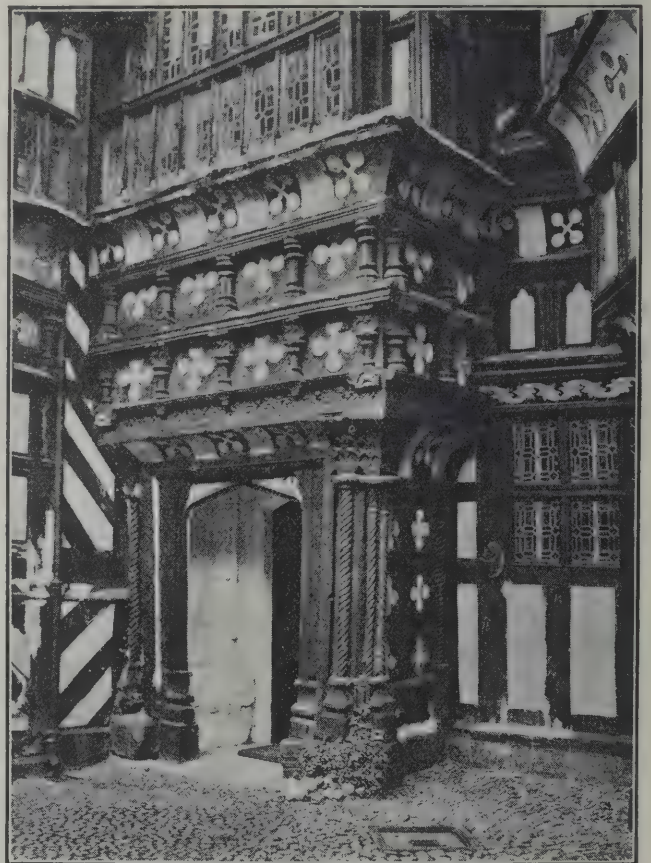


FIGURE OF DESTINY AT THE END OF THE LONG GALLERY, LITTLE MORETON HALL.

Besides the inscription on the upper storey there is an interlacing of carved figures, all suggestive of the doings of the Moretons and their neighbours. The fox, hare, dragon, bear's head, bull's head, and a human head are all there representing the chase, the den, the block.

The leaded windows in geometric forms are indeed unique. In the lower storey each oblong contains thirty-seven panes. There are nine windows on each of three sides, so that each lower bay numbers at least 999 panes, a magnificent achievement by Rycharde Dale or his successors.

The portico with its array of painted quatrefoils is striking. The whole structure is built of black oak and abounds in richly carved capitals and shafts. The spiral pillars by the doorway are types of the wood-worker's art



THE PORTICO, LITTLE MORETON HALL.

service is held in the small oratory chapel at the south-east corner of the quadrangle. Here is the most ancient portion of the whole building. Two small windows illumine this sanctuary; a rood-screen rises to the panelled ceiling, and texts are crudely printed on the walls.

The present "cheese-room" was in reality a secret chamber, from which a passage was dug under the moat to one of the mounds in the fields adjoining. If the hall were stormed and captured, the beleaguered occupants could escape at the last moment.

Round the lofty newel-post we ascend a winding stairway to the long gallery or ball-room. This retains its antiquated splendour in all details. The oaken floor and panelling are unscathed, save for the scratching here and there of pocket-knives and hat-pins. The room measures 75 feet by 12 feet, having an altitude of 17 feet. The cross-and-tie beams are strong as ever; and though the lateral walls bulge somewhat, stay-rods maintain the whole room in sound equilibrium.

On this floor the Virgin Queen danced with her host and courtiers. Then Moreton was at the zenith of its fame, and illustrious guests poured on the great house at every chase. Over the panelling at one end of the room is carved in plaster the figure of Fortune blindfolded, and holding aloft "The wheele of Fortune whose rule is ignorance."

front shows one of the most typical of "magpie" structures. Bramhall Hall was originally quadrangular with an enclosed courtyard. The west wing, however, was demolished in 1819, leaving thirteenth-century work on the north side and fourteenth on the south. The banqueting hall is 40 feet by 20 feet, and has a well-lighted oriel window in the centre. The private chapel contains an oak stall, brought here from the Davenport Chapel at Stockport.

The ancient right-of-way through the courtyard, mentioned by Harrison Ainsworth in "Rookwood," has long fallen into disuse. Sir William Brereton attacked Bramhall during the Civil War. He spared its retainers, but compelled them to open every box and chest and disclose the contents. His musketeers also relieved William Davenport, the occupier, of seventeen horses.

Adlington Hall is the ancient home of the Leghs, and is renowned for its "magpie" courtyard. The first portion was erected early in the sixteenth century, and a wing was added by "Thomas Leyghe and Sibbell, daughter of Sr Urian Brereton of Hondforde" in 1581. An uncommon



BRIDGE AND MOAT, LITTLE MORETON HALL.

Opposite is the figure of Destiny transfixing a globe, with the inscription, "The speare of Destinye whose ruler is Knowledge."

Diamond rings were not unknown to the Breretons and Moretons; one of their numerous guests scratched the ball-room windows with curious words:—

"Man can noe more
Know woeman's mind
by kaire
Then by her shadow
Hide ye what clothes
she weare."

In the retiring-room the fireplace is guarded by figures of Justice and Mercy supporting the arms of Moreton and Macclesfield. It was in the reign of the third Edward that John de Moreton married Margaret de Macclesfield, thus uniting two influential local families.

From Moreton to Bramhall is but a mild step. The old hall of the Davenports has been brought to an excellent state of preservation. Its glory hath not departed; and the

feature of this courtyard is that in some parts the plaster is painted black and the timbers white.

The Great Hall of Adlington was famed in times of peace and war. Handel played on its fine organ, and is said to have composed here his "Harmonious Blacksmith." During the Civil War of Charles I. 150 soldiers held Adlington for two weeks, being then forced to surrender with 700 blunderbusses and fifteen barrels of powder.

Prestbury, three miles away, has a prominent "magpie" by the high road. This is the vicarage or "priest's house" opposite the church. An open-air gallery joins the two front bays. During the troublous days of the Commonwealth the ejected minister preached from this gallery to his congregation, the doors of the parish church being closed against him. Marriages were solemnised in the house.

Chorley Hall, at Alderley, has a beautiful "magpie" wing, and though now used as a farmhouse its ancient dignity is well maintained. It dates back to the sixteenth century, when William de Honford lived at the hall. Then the courtyard was complete, and the building was sur-

rounded by a wide moat spanned by a double-arched bridge. This wing still retains a fantastic overmantel and some elegant carving.

of the original building erected by Uryan Brereton in 1562 remains unblemished. Where the brick casing is in evidence it is painted to harmonise with the ancient struc-



HANDFORTH HALL.

At Gawsworth, on the Macclesfield-Congleton Road, is a celebrated piece of "post and plaster." The Old Hall has seen days of stress and storm, and has suffered in consequence. It was the home of Lady Mary Fitton, Queen Elizabeth's maid of honour—Shakespeare's "Dark Lady."

ture as a whole. The "bear's head" of the Breretons appears over the doorway; it is the same crest which is seen in the "magpie" on Brereton Green.

With the growth of garden "cities" and "suburbs" the preservation of these ancient halls and homesteads becomes



WARBURTON CHURCH, CHESHIRE.

The old vicarage—also half-timbered—stands on the opposite side of the church.

The Gawsworth "home" and estates appertaining thereto have figured prominently in our country's annals; and the old times have left in the hamlets around some of the prettiest "magpie" homesteads ever built.

At Brereton Green, near Sandbach, is a fine example of the "village inn" erected in the seventeenth century, of bricks, post and plaster. The carving about the doorway is very picturesque from an architectural point of view. Another "green"—that of Arley—is well worth noting. Its "magpie" school and school-house have provided models for many modern cottages, schools and club-houses. Arley Green is on the Warburton Estate where the pictorial and antique in architecture is preserved with every possible care. The ancient church of Warburton was built in three periods; the post and plaster being the first, as is evidenced by its massive pillars, struts, and tie-beams.

Handforth Hall, like Moreton, presents many features of line and curve which are of sound import to the draughtsman. Handforth is not all post and plaster, though much

increasingly important, as every type of rural dwelling-house modelled in black and white may, from these time-honoured examples, learn much to its advantage.

THE MANOR HOUSE, UPPER SWELL, GLOUCESTERSHIRE.

THIS charming house is situated about one mile from Stow-in-the-Wold, and in the heart of the Cotswolds. Built on a rising ground and adjoining the church, it attracts attention immediately by its picturesqueness and excellent architectural proportions, the two gables running into each end being very uncommon. The interior contains some very good Jacobean panelled partitions, and in the first floor room to the left of the sketch a very fine example of an open fireplace, with dog grate of the same period. This must originally have been the principal reception room, as it is the largest in the house. The staircase, a very large one in oak, has a succession of small flights and quarter landings, returning and running back for a distance of 18 feet, and the flights are 5 feet 6 inches wide. The whole of the staircase is heavily moulded with ball finials to the newels, and the



From a Drawing by Mr. J. BERNARD MENDHAM.

"THE ARCHITECT," STUDENTS' SKETCHING AND MEASURING CLUB.

balusters, $3\frac{1}{4}$ inches square, are exceedingly handsome. There is no definite date assigned to the house, but it is believed that it was built about 1615 A.D., and no doubt some historical

incidents are associated with it, but these are not available. Altogether the house is very interesting, and well worth a visit by architectural students.



OLD HOUSES - GILSGATE
HEXHAM.

From a Drawing by "SANS PEUR."

"THE ARCHITECT" STUDENTS' SKETCHING AND MEASURING CLUB.

Old Houses, Gilesgate, Hexham.—A pair of seventeenth-century houses in an old part of Hexham, quite interesting in character.

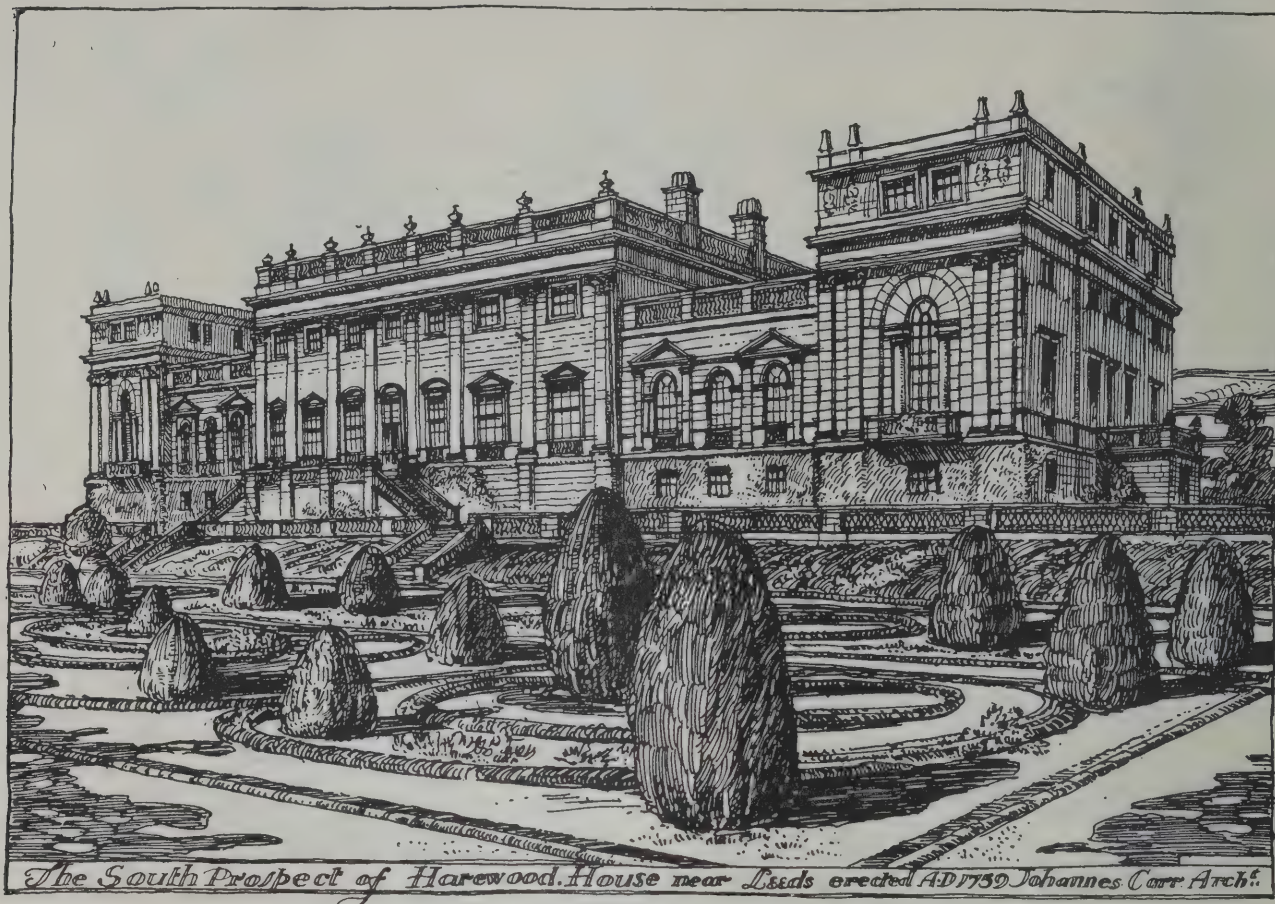


OLD INN - ELVET
DURHAM.

From a Drawing by "SANS PEUR."

"THE ARCHITECT" STUDENTS' SKETCHING AND MEASURING CLUB.

Here is shown an old posting inn in Old Elvet, Durham, a relic of bygone days, with its roof of massive stone slabs and projecting bay.



The South Prospect of Harewood House near Leeds erected AD 1759 Johannes Carr Arch^t

From a Drawing by "L'QUAYT."

"THE ARCHITECT" STUDENTS' SKETCHING AND MEASURING CLUB.

HAREWOOD HOUSE, YORKSHIRE.

HAREWOOD HOUSE, near Leeds, the seat of Lord Harewood, was built for Mr. Edwin Lascelles in 1759 by John Carr, architect, of York. In Sir William Chambers's book on "Civil Architecture" there is a note in reference to a design for a garden house at Marino that it "was originally made for one of the end pavilions of a considerable composition, which, among many others, Mr. Lascelles procured for Harewood House." A complete design for Harewood House by Adam exists in the Soane Museum, and Mr. Sydney D. Kitson, in his paper read before the Royal Institute of British Architects last January, is of the opinion that Carr was largely influenced by Adam's competition work, and that he merely modified it in detail. Sir Charles Barry made considerable alterations and additions last century and absolutely destroyed the original composition. He added an ill-proportioned attic storey to each wing, built a high balustraded parapet on the centre block, and removed the columned portico on the south front. This latter mutilation is particularly unfortunate, as the pilasters are now unequally spaced and destroy the rhythm of the composition. The removed capitals to the columns, parts of the entablature, and the carved tympanum are now lying in the estate building yard.

The house was decorated by the brothers Adam, the furniture was designed and made by Thomas Chippendale, and the gardens laid out by "Capability Brown." The building is erected of a very fine sandstone and, like all Carr's stone building, is a marvel of scientific masonry. The detail is refined and shows evidence of Adam's influence, but the composition and details are not so perfect as that shown in the entrance lodge and gateway built by Carr after the house was finished (illustrated in *The Architect* of November 4, 1910).

H.M. TRADE COMMISSIONERS for South Africa report, in connection with the development of the building trade in the Transvaal, that during the three months, July to September last, seven Transvaal municipalities approved plans of buildings to be erected at an estimated cost of 626,171*l.*, an increase of 233,383*l.* over the cost of the buildings authorised in the previous three months.

THE TAJ MAHAL, AGRA, AND ITS RELATIONS TO INDIAN ARCHITECTURE.*

THE Taj Mahal, situated in India on the left bank of the River Jumna, a short distance from Agra, is, on account of its beauty and costliness, one of the wonders of the world. It is the tomb of Argemond Banu, the favourite wife of Shah Jehan, who constructed it in the year 1631. He himself passed away in 1658, and his remains lie beside those of his queen.

The building stands on a platform 18 feet high and 313 feet square, with four minarets at the corners, each 133 feet high. The building, which is 186 feet square, with the corners cut off, occupies the centre of the platform.

The height of the façade in the centre is nearly 100 feet above the level of the platform, while the apex of the dome rises to nearly twice this height. The interior contains an octagonal chamber in the centre about 50 feet across, with passages leading to four smaller chambers at the angles. The whole of the interior and exterior consists of pure white marble inlaid with agate, blood-stone, jasper, black marble, and lapis lazuli in that form of Florentine mosaic known as "pietra dura."

This is all the technical description of the tomb that I propose to give you, because my object in this lecture is to show you wherein the secret of the great beauty of this monument lies, a beauty which is dependent not only on its immediate surroundings, but on the state of the weather, the time of day, and even the artistic discernment of the beholder, which may account in a great measure for the differences of opinion among visitors. Doubtless all buildings are affected in the way I have suggested, but when you understand the secret of the Taj you will understand why this building is pre-eminently so.

The only two points to which I would call your attention just now are, first, the difference in the outlines of the great dome and the subordinate domes, and, secondly, the fact that no work above the roof serves any useful purpose. Perhaps there is no building in the whole world which has received such extravagant praise from travellers, and no building in

* Abstract of a paper read before the Indian Section of the Royal Society of Arts by Robert F. Chisholm, F.R.I.B.A., F.S.A.

the world of which pictures, photographs, and models convey so poor an idea, the reason being that the high position to which most travellers raise it is due more to its unique, almost magical appearance, than to either its architectural merits or to an appreciation of its intrinsic value. In regard to its architectural merits, buildings can be found in India surpassing it in every direction, and for size and boldness of construction the Taj falls far below the Gol Gombaz at Beejapur. This building covers a square of 135 feet 5 inches; Santa Sophia, at Constantinople, covers an area of 103,200 feet; St. Peter's, at Rome, 227,069 feet; and St. Paul's, London, 84,025 feet.. In wealth of intricate detail and great delicacy of finish it is surpassed by the Jain temple at Dilwara, on Mount Abu, in Rajputana; in size, unity, and symmetrical arrangement by the great Jumna Musjid at Delhi; in constructive skill by the ingenious doming of the mosque of Sher Shah in the old Kila at Delhi; in magnitude and extent by the great Sivite Temple of Madura, South India, and in strict conformity to the canons of pure architectural decoration by the building known as Jehanghirs Mahal at Agra and the Bir Bul at Fatehpur Sikri.

Perhaps some of my hearers may have observed a curious illusion which occurs at sea if a boat is approaching from a distance; the men who man the boat look like pigmies, and if nothing intervenes to express distance, and you watch continuously, the men remain pigmies until the cheated sense revolts, and the pigmies suddenly enlarge to full-sized men; to me personally, the illusion remains until the boat is quite close to the ship. Now in some such way I seemed to realise suddenly that what I took to be a model was a building of noble proportions, but this knowledge seemed to increase rather than to diminish the effect of mystery; it was truly unlike anything I had ever seen—a translucent visionary object, part of the sun-bathed atmosphere, all-satisfying in its loveliness. For awhile I stood gazing in the simple enjoyment of the scene, then, as the sense of keen pleasure gave place to a sense of curiosity, I determined not to move forward one step until I had solved, at all events in part, the secret of this almost unnatural effect, and how it came about. First, I observed that all the shadows were in a very high key; the lights on the dark foliage of the cypress trees were deeper than the deepest shadows on the building; again, the windows, which seemed at that distance simple frames, opened into comparatively light, not dark chambers, while the entrance doorway looked like an ink-blot, seeming to mar the general harmony. I felt convinced at once that this was not intended, and looked for other inharmonious notes. These I soon found in the deep shadows of the subordinate cupolas on the roof. As my eyes became more critical, I detected the comparative coldness of the shadows above the roof as compared with those below; the shade of the great dome was grey, while the shadows of the recesses were of a warm amber colour. Everything above the parapet seemed cold and lifeless, while everything below sparkled in the brilliant sunshine, suggesting tones of crimson, citron, green, and orange. Approaching the building, I found it to be in the centre of a large platform of white marble which cannot be seen from the entrance, but the roof, which was doubtless also intended to be of white marble, was covered with that dulllest of all dull but useful materials, Portland cement—a deep-toned green-grey! The difference in the effect seems to justify the belief that the roof was intended to throw back on to the dome the maximum amount of reflected light, just as the marble platform on which the building stands throws back the maximum of reflected light on the lower part. The face of this platform, viewed from the gateway, appears to be part of the building, an intentional illusion I believe, which adds to the general ethereal effect by the weakening of the shadows due to the distance between the foliage and the building. Examining the windows more closely, I found that the comparatively light appearance was due to a regular pattern of white marble which acted as a white veil, and could not be perceived at a distance. As cost was no object, I cannot help thinking that if the effect produced was not intentional, the windows would have been filled by elaborate arabesqueing, like the screen at Delhi or the Ahmedabad Palm window. Tracery of this kind would have had a much richer effect, but, of course, it would not have toned the openings to that delicate warm grey. I found also the intensely black spot (the entrance which really opened into the building) to be without a blind or chick, though the two metal rings intended to hold it were in the lintel of the door. Mr. Havell, in his essay on the Taj and its designers, published in the *Nineteenth Century and After*, says that this opening was originally closed by silver doors.

If this is true, the door-hangings are probably in the frames still; the rings for the hanging of the chicks satisfied me, and I am sorry I did not look further. Again, the four corners of the building are cut off to a considerable extent to avoid the depth produced by simultaneous contrast. Lastly, the effect which would have been produced by mouldings and sunk surfaces in this particular style is here produced by black marble inlay, so that the general appearance is not unlike lace, and at the first glance gives the effect more of a drawing than of a real building. It is difficult to imagine that the attempt to secure the maximum of reflected light, the systematic heightening of all shadows on the façade and dome, the avoidance of strong contrasts, and the provision for planting heavy foliage around and before the building, were all the result of accident rather than the systematic working out of an artistic idea, and still more difficult to understand how, if that idea originated with the architect of the building, it was not carried out consistently to the finish, instead of being stopped at a point where, owing to the deep blue of the zenith, the strongest reflected light would be required. I do not intend by these remarks to disparage the architecture in any way. I am quite ready to admire the proportions, and to admit that the Taj would be a remarkable building under any light and constructed of any materials. What I desire to point out is that the startling ethereal appearance is not due to scholastic architecture, and could hardly have originated in an architecturally-trained intelligence, for such an intelligence is antagonistic to this principle of subordination, and delights in producing brilliant contrasts; it is rather an artistic thought, the idea of an artist, a man who loved light and could divide it into a hundred shades; a man who said to himself, "I have here practically an inexhaustible purse; the most lustrous material the world can produce, and the brilliance of a tropical sun. I will use my materials as I would paint a picture, subordinating all the deep shadows on the building, so that it will appear ponderous yet cloud-like, rising like a dream-palace out of a garden consisting of the deepest foliage procurable." The effect which the building produces on the observer leaves the artist's success beyond a doubt, for the man with the idea has portrayed materially the subtleties of pictorial values, which neither picture nor photograph can fix; in fact, he did for this style of art what Shakespeare did for the drama of his day, and the Taj will always be condemned or exalted in exact proportion to the perception of the idea.

In order to see clearly that this building was the natural outcome of the architecture of the period, we must glance at its history.

The Moghul empire, commencing with Bâber in 1526, lasted till about 1707, a little less than 200 years, and during this period a broad belt of the country from Lahore to Agra came under its immediate sphere of influence. It must be borne in mind that when the Mohammedans conquered India they found in all parts of the country a perfected art of architecture and groups of skilled workmen who were freely employed in all directions, and the Mohammedan ideas which filtered through these workmen gave rise to that mixed form of art named by Mr. Fergusson Hindoo-Saracenic, and if the zeal and energy the Hindoos threw into their work is any indication of the state of their feelings, it is interesting to note the goodwill that seemed to exist between the two races. But there was another influence at work. The commercial relations with all the countries west of the Indus increased during this period, and in proportion as they increased the Hindoo element died out of the architecture, and, at the time the Taj was built, although the actual workmen were Hindoos, the feeling and many of the forms were imported from the Bosphorus or Persia. We may conveniently divide the architecture of this period into three classes: first, the pure sandstone work; secondly, sandstone and marble mixed; and, thirdly, pure marble. In architecture the Hindoo disliked the arch as much as the Greek did; both seemed to have felt instinctively that an arch always embodies the self-destructive element; an arch is, as it were, always "awake" and never for one moment forgets to exert a thrust. In pure Hindoo art openings are bridged by corbelling, and it is to the strict adherence to this principle that we owe the great sense of repose which their architecture conveys.

Perhaps the most beautiful and intricate style of corbelling is to be found at Dehboi, in his Highness the Gaikwar's dominions. The same hatred of thrust and cross-strain exhibits itself in their domes, which are of low curvature on the exterior. First, the corners were corbelled out to form an octagonal figure, then stone beams were laid alternately,

MODERN EUROPEAN ARCHITECTURE.
AUSTRIA.



CHLOSS KNESCHÜTZ.—Herr LEOPOLD BAUER, Architect.

[From *Moderne Bauformen*.]

square and diagonal until the space was small enough for a single stone.

It is hardly necessary to point out that this style has its limitations; its halls of a thousand columns simply meant that the space required necessitated a thousand points of support. But with the Mohammedans came the demand for greater clear space and greater height, and the consequent introduction of the arch and the true dome. The Hindoo builder never assimilated the arch; indeed, when used as a constructive feature, its lines were ignored and its decoration had no sympathy with the joints of the work. The arch would be constructed as an arch, but the lines of ornamentation accentuated panelling. It was not so, however, with the dome. From the first they seem to have grasped the fact that, unlike the arch, the self-destructive element is under control, that each ring of a dome properly tied exerted no outward thrust; hence, under Mohammedan influence, the dome-builders of India attained a mastery over this form unknown and seemingly unappreciated by the builders of the western world.

You will observe that if it is required to cover a square area by a dome, the section from corner to corner presents a very different aspect from that of the section parallel with the sides, as the corners are wholly unsupported. The methods adopted for supporting the superincumbent mass at the angles differ in different styles and different countries; perhaps the most beautiful and stable was that adopted generally by the Central India dome-builders. This method may be described as the intersection of two squares within the larger square in such a way as to leave a true octagon in the centre. This was further reduced by a figure of sixteen sides before passing to the round. An arch is then thrown from 1 to 2, 2 to 3, 3 to 4, and 4 to 1. Each of these arches are intersected in two points. The interior view is very beautiful. If an embroidered cloth is thrown over the "eye" the effect is much enhanced, and the echo destroyed. A dome constructed of stone can be cramped and doweled ring

by ring, but when constructed of brick the stability depends a good deal on the strength of the mortar. The great dome at Beejapur has cracked into lobes, and each lobe rests against its opposite neighbour in perfect equilibrium.

The dome of the Taj starts at once from the octagon, and is closed practically at the roof level, so that all above is merely for show. These domes seem to have been built without centres. Scaffolding and centring in India is formed of bamboos tied together with coir rope, and the form of the arch on the top is made up of brick laid in mud and brought to the correct form with clay. No centre of this description could stand continuous heavy rain, consequently the size of a dome, if supported during construction on a centre of this kind, would be limited by the amount of work which could be done during the dry months of one year. At Golkonda I noticed among the tombs that the last to be built had a very elongated appearance. Going inside to ascertain the cause, I found that it was not a true dome at all; the builders were evidently working on tradition, they had feebly turned in the top until their hearts failed them, then they had boldly trussed the upper part and left the truss in.

A cursory glance at the architectural development which extended over three-quarters of a century, shows that although the workmen always were, and indeed are now, mostly Hindoos, the style was gradually tempered by western ideas, and that at the time the Taj was built the Hindoo spirit had almost passed away. The general arrangement of a central dome with four smaller domes at the angles is similar to that found in Humaion's tomb in old Delhi.

I have endeavoured to show that the unique appearance of the Taj Mahal arises from a studied and systematic system of heightening the deep shadows and avoiding all those black patches which destroy a sense of distance. Its architectural lines were the natural outcome of the styles which preceded it, and the foreign influence is no stronger in this building than in other works constructed during this period. The

MODERN EUROPEAN ARCHITECTURE.
AUSTRIA.



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SANATORIUM AT PURKERSDORF.—Herr LEOPOLD BAUER, Architect

[From *Moderne Bauformen*.]

startling effect of the Taj is due to the studied control of light and shadow to produce what one might almost term a scenic effect in opposition to that produced by ordinary architectural practice, and I also think this effect largely dependent on the extent and quality of the foliage in the surrounding garden, and that the first glimpse of the building should always be from the entrance gateway with the sun or the moon in the zenith. That this effect is in the majority of cases unexpected and startling is beyond question.

Dr. Leitner, speaking of the Taj in this room not many years ago, compared it to a piece of lacework. "It appeared," said he, "with its dark background of foliage to float in the air, it was more like a dream than a reality." Bishop Heber said it was the conception of giants carried out by goldsmiths. The late Sir W. W. Hunter described it to me as "a stupendous jewel—not a building at all!" But perhaps the best description is that given by Sir Frederick Treves, one of the most recent travellers. "Every-one," he says, "who visits Argemond Banu's tomb for the first time approaches it with curiosity, tinged probably by a faint disposition to be hostile. So much has been written about this wonderful building, so much rhapsody has been lavished upon it, that there is some suspicion of over-praise. The claim that it is the most beautiful building in the world is a claim that many at once resent. Its outlines are familiar enough from pictures and models, and it may be that they hardly warrant unrestricted ecstasy. The visitor proposes to himself to put sentiment aside and review the building critically . . . to submit it to a common-sense inspection, for he is inclined to believe the Taj Mahal to be a much overrated monument. He has, indeed, already imagined himself on his return home giving to his friends evidence of his originality by asserting that as for the Taj he sees nothing in it. . . . With the first sight of the Taj Mahal there comes only a sense of indefinable pleasure, it is no mere feeling of admiration, still less of amazement. No mere delight in a splendid building, because it does not impress one as a building. There is a sudden vision, and

with it a sudden sense of ineffable satisfaction, as if in the place of a marble dome the garden had been filled with divine music. All intended criticism is forgotten; there is nothing that appeals to the judgment or that suggests the weighing of opinions. There is merely a something that touches the finest sense of what is tender, beautiful, and lovable—a white cloud, luminous, intangible, translucent! The secret of the beauty of the Taj Mahal lies in the great arched recesses or vaulted alcoves which burrow deep into the body of the building. These are throbbing with sensitive shadows, and they give the impression that the onlooker can see into the very heart of this gentle palace as one would gaze into the heart of a yellow rose, where leaf by leaf the tints become deeper, warmer, and more living. There is ever a sense of something half hidden and half revealed of a tenderness which has deeper depths! . . . It is this abiding suggestion which makes the peculiar glory of the Taj a glory which is beyond the reach of any picture or any model. To many the Taj will be the most beautiful building in the world, while there must be few who would not acknowledge that it is the most lovable monument that has ever been erected." If architecture compared with mere building is really the compensation which man offers to his fellows for robbing them of so much of God's fair work as each building blots out, the sins of the man who inspires such praise as this must surely be forgiven. Who the man was matters very little; indeed, for all that, it might have been a woman! But whoever it was, receives the gratitude of countless admirers.

ROYAL ACADEMY WINTER EXHIBITION.

THE outcry raised when the Royal Academy authorities offered, instead of the usual Winter Exhibition of Old Masters, the heterogeneous collection of pictures purchased by the late George M'Culloch, will not presumably be repeated on the present occasion. Nevertheless, many of the objections raised two years ago would not be inapplicable to the Winter Exhibition which was opened to the public on

Monday last. This year five of the galleries are occupied by the works of as many deceased members of the Academy. The cult of the Old Masters is in no danger of decay yet awhile; while the appreciation of modern art is. Presented in the way of a Winter Exhibition the works of these deceased artists are not shown in any unduly favourable light, for they court searching criticism and cold comparison. The five artists represented are Sir W. Q. Orchardson, Mr. W. P. Frith, Mr. R. W. Macbeth, Mr. J. M. Swan, and Mr. D. Farquharson. They represent an interesting phase in national art and are of historical value.

The first gallery is filled with pictures and one figure piece by Mr. John M. Swan, who is accepted as one of the leading spirits in our small school of animal painters. After studying at the Lambeth Art School (under John L. Sparkes) Mr. Swan went to Paris, where he was under Gérôme, Bastien-Lepage, and Dagnan-Bouveret for painting, and Fremiet for sculpture. His earliest contribution to the Royal Academy was sent in 1878—"Dante and the Leopard"—and is here shown on the walls. Some eighteen years later came "The Piping Fisher Boy." These can now be, and should be, compared, for they are a striking testimony of all-round improvement. The later work is a really charming contribution. As recent as the 1910 Exhibition was "The Cold North" shown, and so this remarkable picture must be fresh in the minds of our readers. It has been said that it shows more superficial handling than his "Polar Bears." This is open to doubt, for the poignancy of the icy desert seems more accentuated by the huge forms of the two motionless Polar bears stretched at full length upon an ice hummock, as compared with the three Polar bears vigorously swimming. Another familiar picture is his "Orpheus," the nude young god striding through the forest preceded by birds and butterflies and followed by a train of beasts. "Lioness Defending her Cubs" is a further popular work here shown. There are many other examples of this artist's known skill in depicting animal character, and most especially of the cat tribe. In the water-colour room is a valuable collection of drawings and bronzes by Mr. Swan.

The late Mr. W. P. Frith, C.V.O., exhibited for the first time at the Royal Academy in 1840, and from that time until 1902 he contributed works without a break, if one excepts a very occasional lapse of a year. He was elected an Associate in 1845, and in 1853 he was chosen to fill the vacancy caused by the death of Turner. His work seems of quite another period to that of Mr. Swan and the other artists who are here represented. His greatest chance of respect from posterity must date from his work subsequent to "Life at the Seaside"—better known, however, as "Ramsgate Sands." In his autobiography Mr. Frith wrote: "My summer holiday of 1851 was spent at Ramsgate. Weary of costume-painting, I had determined to try my hand on modern life, with all its drawback of unpicturesque dress. The variety of character on Ramsgate Sands attracted me." The picture is lent from Buckingham Palace. Seven years later it was followed by "The Derby Day," which would be a notable addition to Gallery II, if it could be included. In 1862 "The Railway Station" was contributed, and it makes one of the most notable and interesting examples of Mr. Frith's work here shown. Though Mr. Frith was such a profuse worker, the number of his pictures at Burlington House is under ten. They will not win for the artist a very high place, though as a figure in the development of English painting he plays an important part.

Sir W. Q. Orchardson is more strongly represented than any of the five artists, for there are over sixty canvases by him. They cover the period from his eighteenth year, when "George Wishart's Last Communion" was shown at the Royal Scottish Academy, to the portrait of "Mr. John Hutchison, R.S.A.," which was in the recent Summer Exhibition. The artist enjoyed a long popularity, though it may be said that he was exhibiting at the Royal Academy for close on twenty years before his "On Board the Bellerophon" attracted general admiration. That work, however, has not been borrowed from the Tate Gallery for the present exhibition. There are others shown which are quite, or certainly almost, as well known. Prominent among them is the finished sketch for "Voltaire," the original of which is accepted as the artist's high-water mark in technique. This sketch was finished in 1907, some fourteen years after the original was completed. A still more sumptuous scene was treated in "The Young Duke"; but it lacks the dramatic compulsion of the earlier work, and is not so arresting, large though it is. About this period appeared a number of works like "A Tender Chord" (reckoned one of his most exquisite productions), "The Salon of Madame Recamier," and "Her Mother's Voice," which firmly esta-

blished his reputation; of these only the first is here shown. The artist is put in the front rank of portrait painters, and his right to the position is abundantly proved by the many fine examples in Gallery III.

Another Scotsman who came to London and captured a leading place among contemporary artists was Mr. Robert W. Macbeth. He is not, however, seen to very great advantage in his present company. His work is chiefly represented by the water-colours and etchings in the Black and White Room. A strong decorative feeling frequently appears, as in his long panel of "A Lincolnshire Gang" and "Potato Harvest in the Fens," which are each about nine feet long by three feet high.

A third Scotsman to achieve a notable success south of the Tweed was Mr. David Farquharson, A.R.A. There are only five of his pictures now at Burlington House. But as they include his recent "Dartmoor" and "Full Moon and Spring Tide," which were both painted in 1904, the visitor cannot fail to be impressed by his capacity.



[The Editor will not be responsible for the opinions expressed by Correspondents.]

Petrol Air-Gas.

SIR,—As one who has made a close study of the properties of petroleum spirit, involving a great deal of research work, I have read with interest Professor Smith's articles on "Petrol Gas" in your recent issues. Now that the series is finished, perhaps you will allow me the hospitality of your columns to point out a small matter in which I entirely disagree with the author of the articles in question.

On page 234, under the heading "Dangers Attendant upon Certain Mixtures," he makes the following statement: "Air absolutely saturated with petrol vapour is not very explosive, though it may be made so by compression. Similarly, air containing just sufficient vapour to allow of combustion, which point practically coincides with that necessary for complete combustion without added air, is also non-explosive."

As he goes on further to state what happens upon an escape into the air, I take it that in the above statement he is referring to the properties of these mixtures without further dilution, as, for example, in a confined space such as the gas-holder of a petrol-gas plant. The question of compression scarcely comes into consideration, as the light pressures used in petrol gas practice can hardly be styled "compression."

Now, Sir, my experience, and I think the experience of anyone with a practical as distinct from an academic knowledge of the properties of petrol vapour is the very opposite to that stated by Prof. Smith—viz., that a saturated mixture, and, in fact, any mixture containing more than about 5 per cent. of petrol vapour, is not only non-explosive but incombustible without the addition of further air. On the other hand, a mixture containing the right amount of air for complete combustion is very explosive, and if a quantity of it is ignited in a closed container will blow that article to bits if it is constructed of the light material employed for small gas-holders.

As several manufacturers of petrol gas employ the self-burning and explosive mixture (1½ to 2 per cent. of vapour in the gas) and a few the richer, and, as I consider, far safer mixture, it seems to me a pity not to put the difference clearly before your readers.—Yours faithfully,

ROBERT W. A. BREWER, A.M.I.C.E. &c.

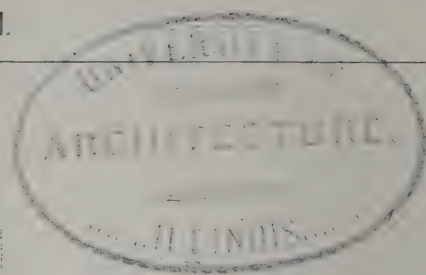
Thin Walls and Piano Playing.

SIR,—As a constant reader of your paper, may I ask a query through the columns of your journal, viz.: Could any readers inform me how to prevent the constant noise of piano-playing penetrating through into an adjoining house? For instance, there is a school adjoining a certain house in which they are playing four pianos the whole day. Consequently the house lies vacant, as I cannot get a tenant to stay. The house is four storeys high, and the noise is as bad at the top of the house as at the bottom.

Trusting some reader will enlighten me, as I have tried different remedies, and thanking yourself for the kind courtesy,—Yours truly,

PIANO PLAYER.

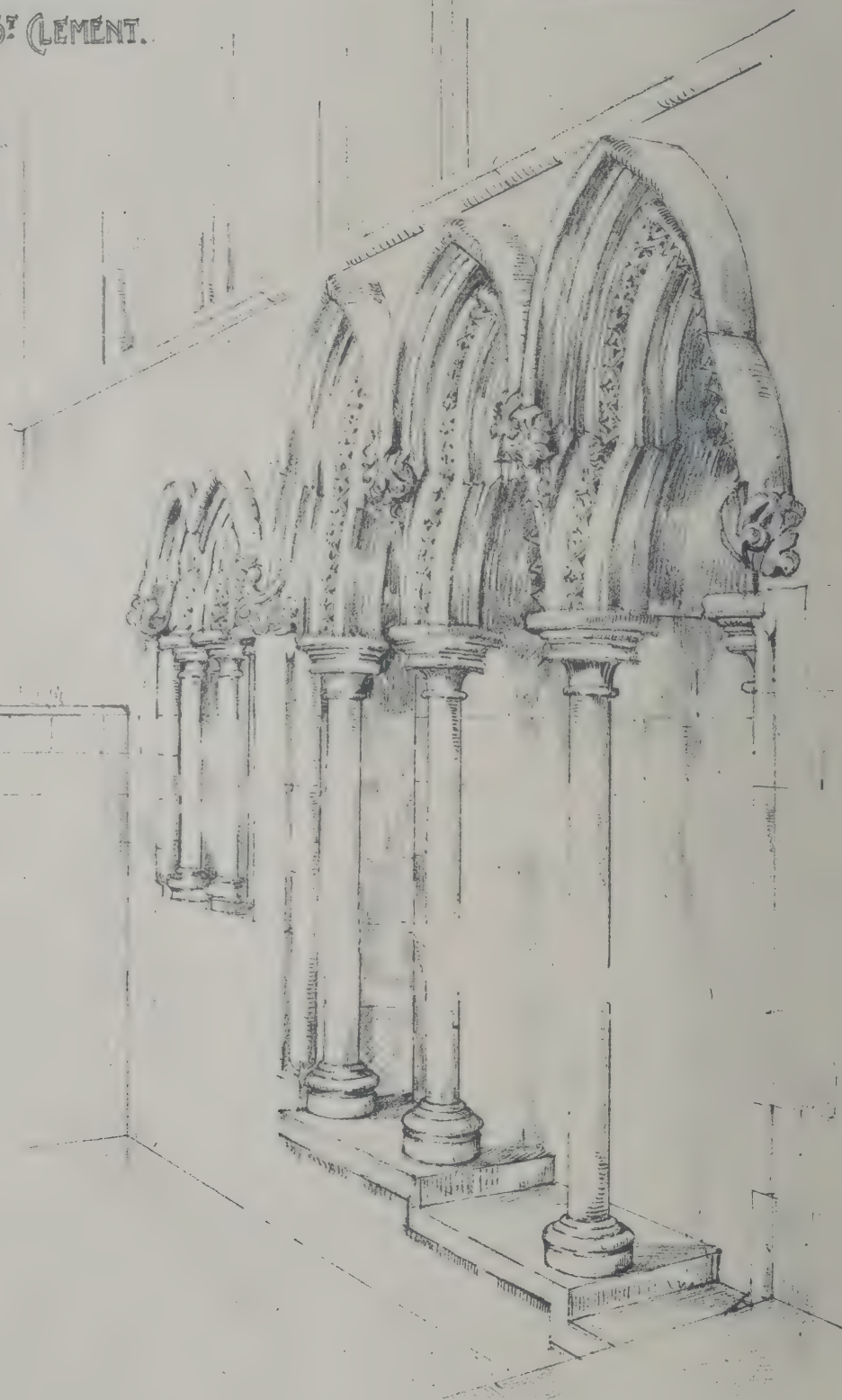
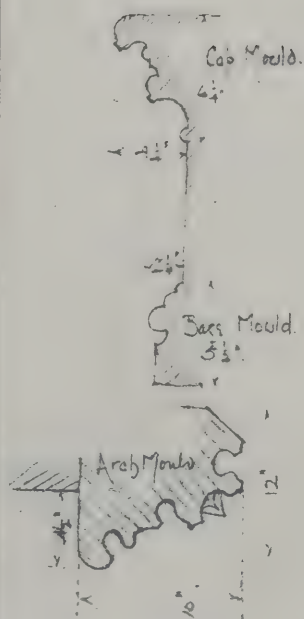




TERRINGTON, ST CLEMENT.
NORFOLK.

Jedilia. & Piscina.
in
Society wall of
Chancel

August 1910.
G.H.W.



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TRAVELLING STUDENTSHIP DRAWING BY MR. CHARLES HENRY WALSH.

"THE ARCHITECT" STUDENTS' SKETCHING & MEASURING CLUB.

ST NICHOLAS, LYNN.
NORFOLK.

Entrance to South Porch
Aug 1910.



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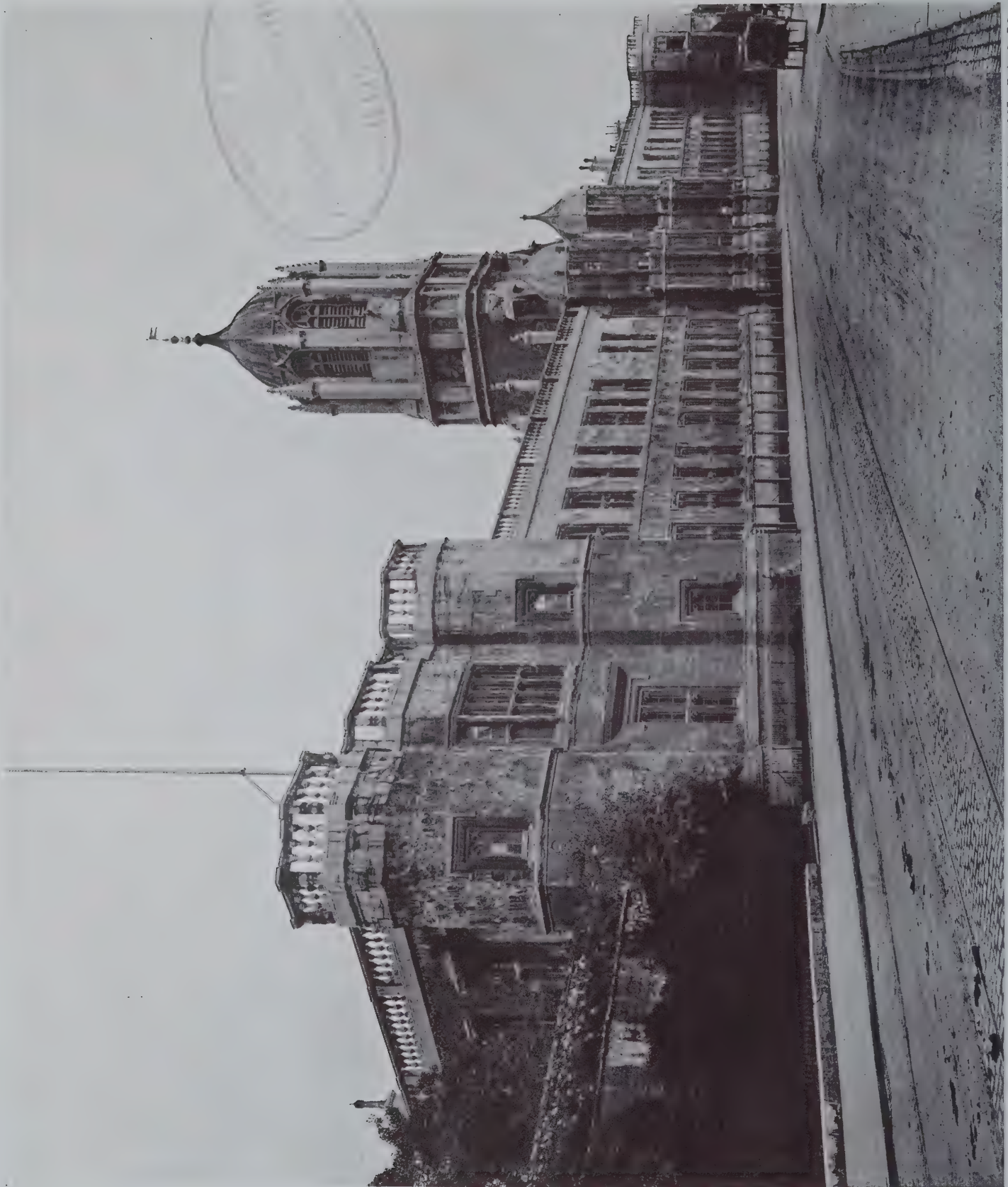


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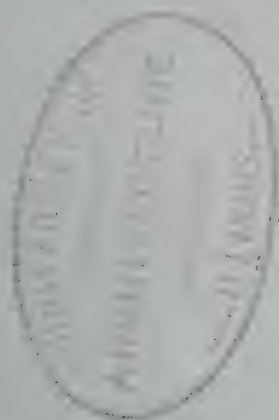
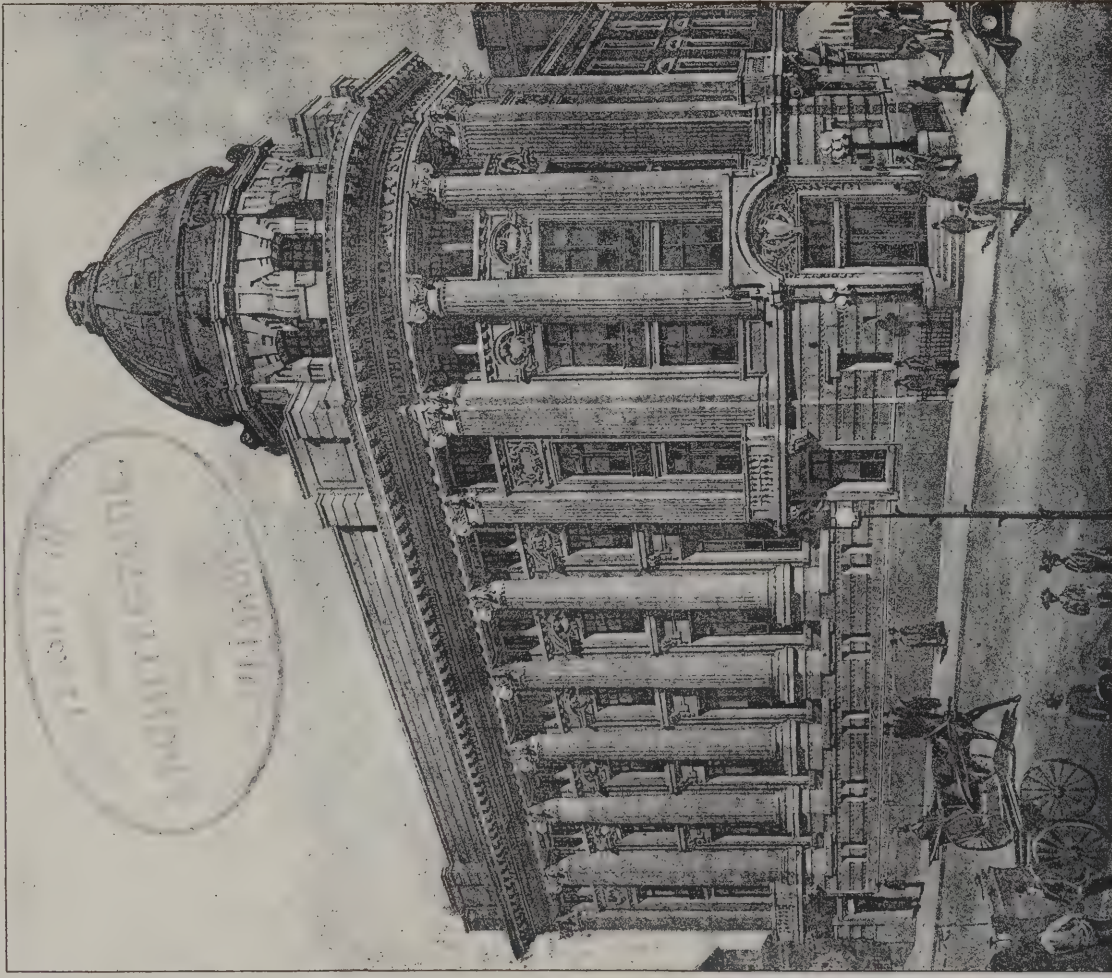


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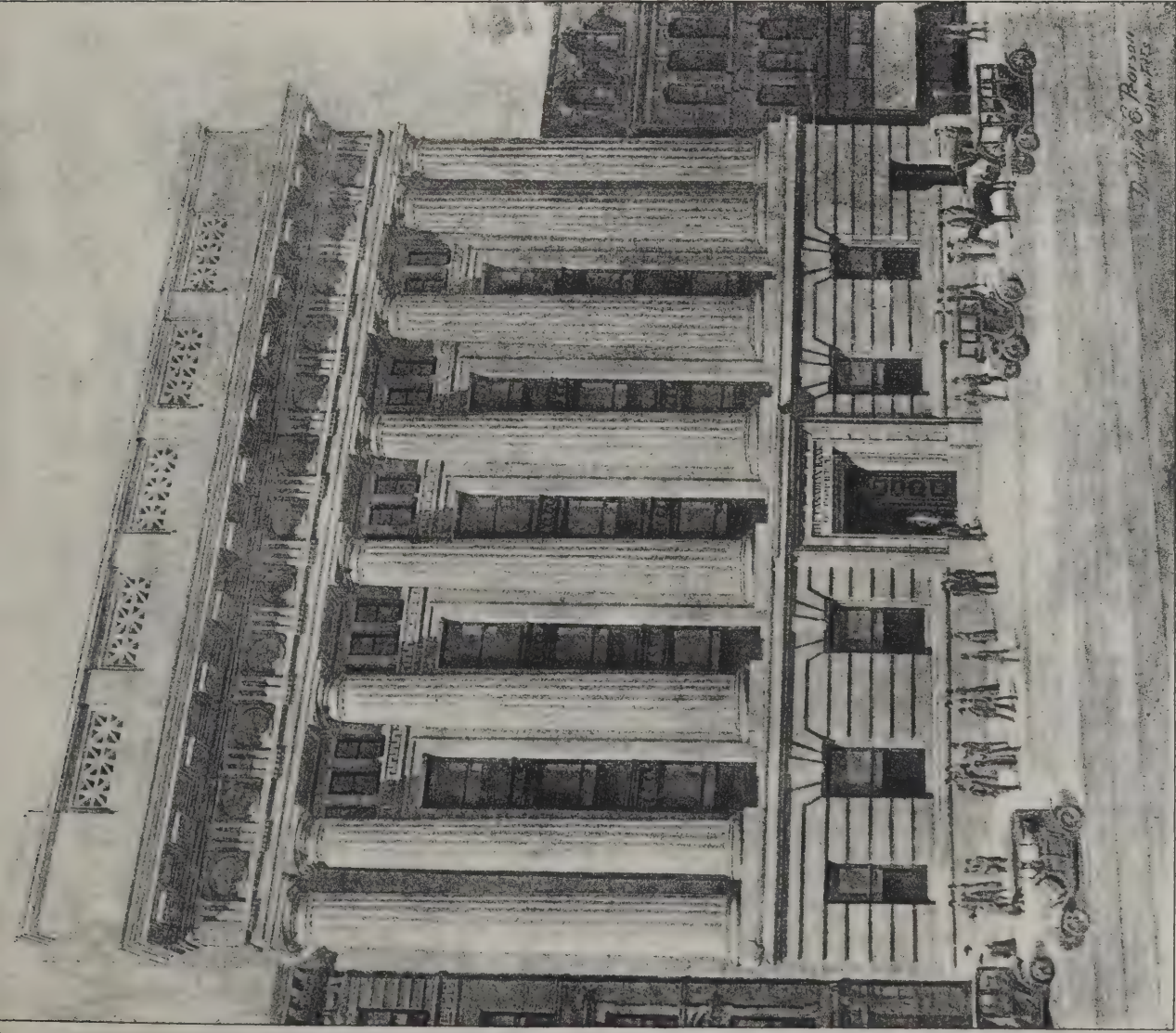
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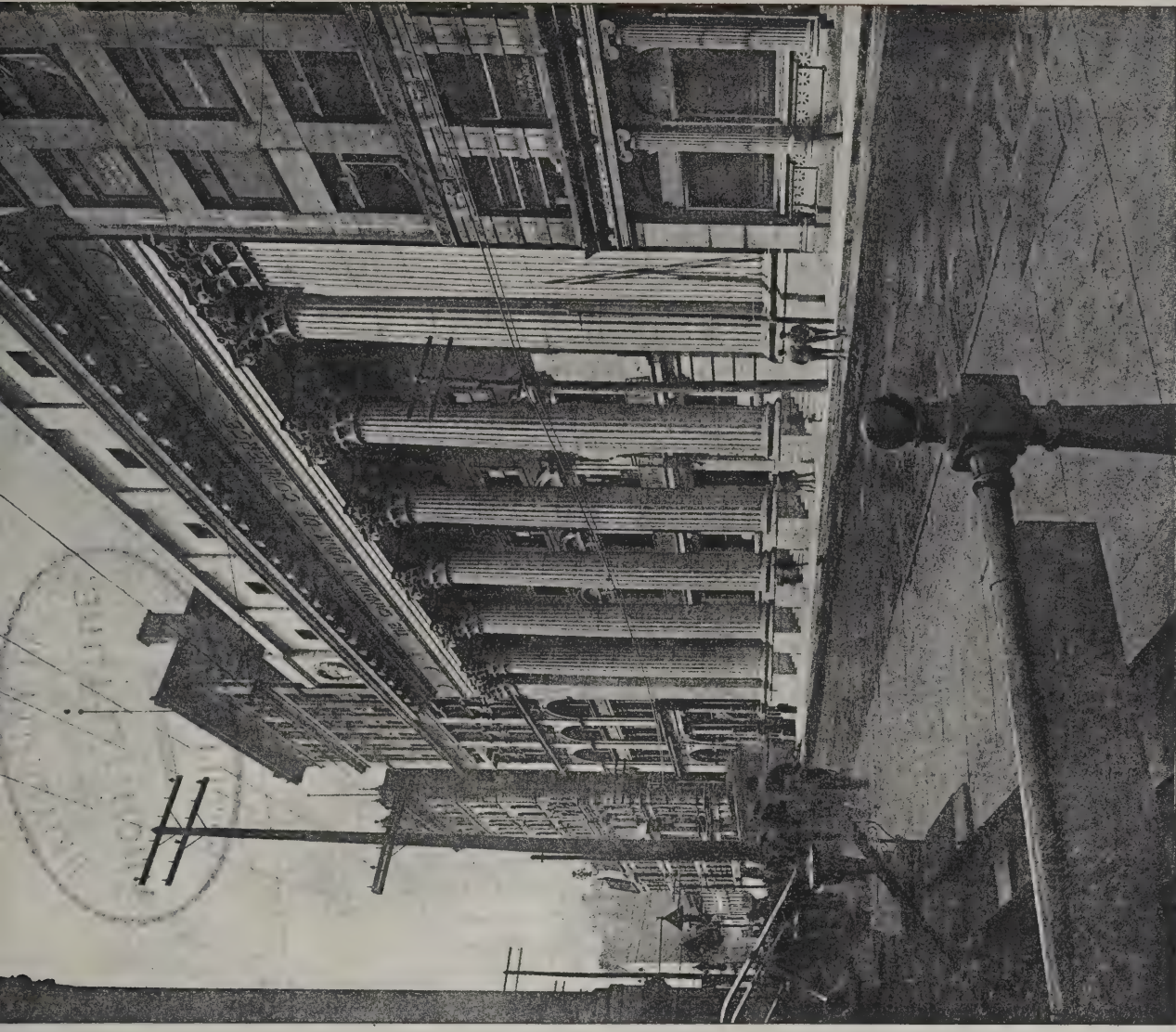
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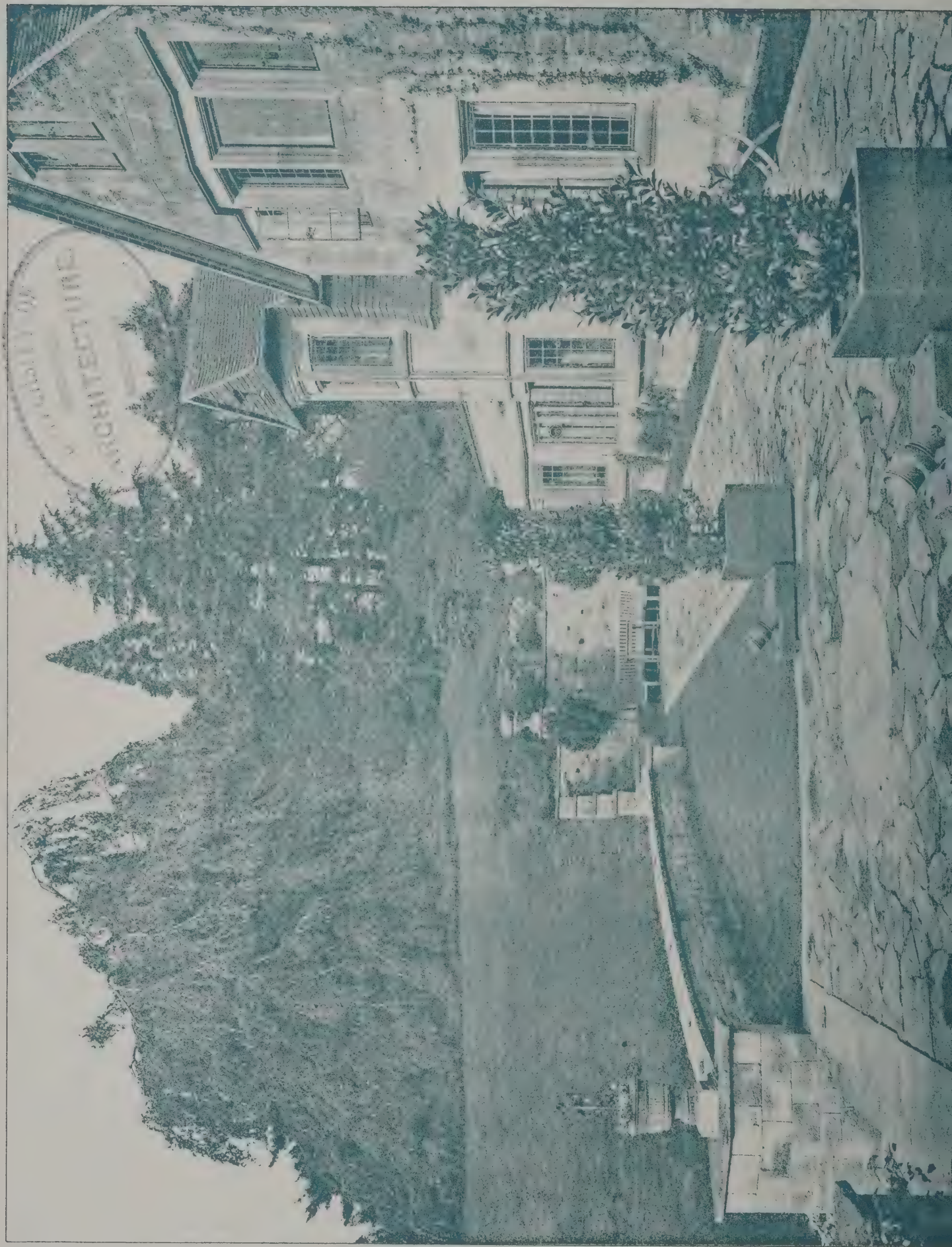


CANADIAN BANK OF COMMERCE, MONTREAL.

CANADIAN ARCHITECTURE.

Messrs. DARLING & PEARSON, Architects, Toronto.

The Architect, Jan. 6th 1911.





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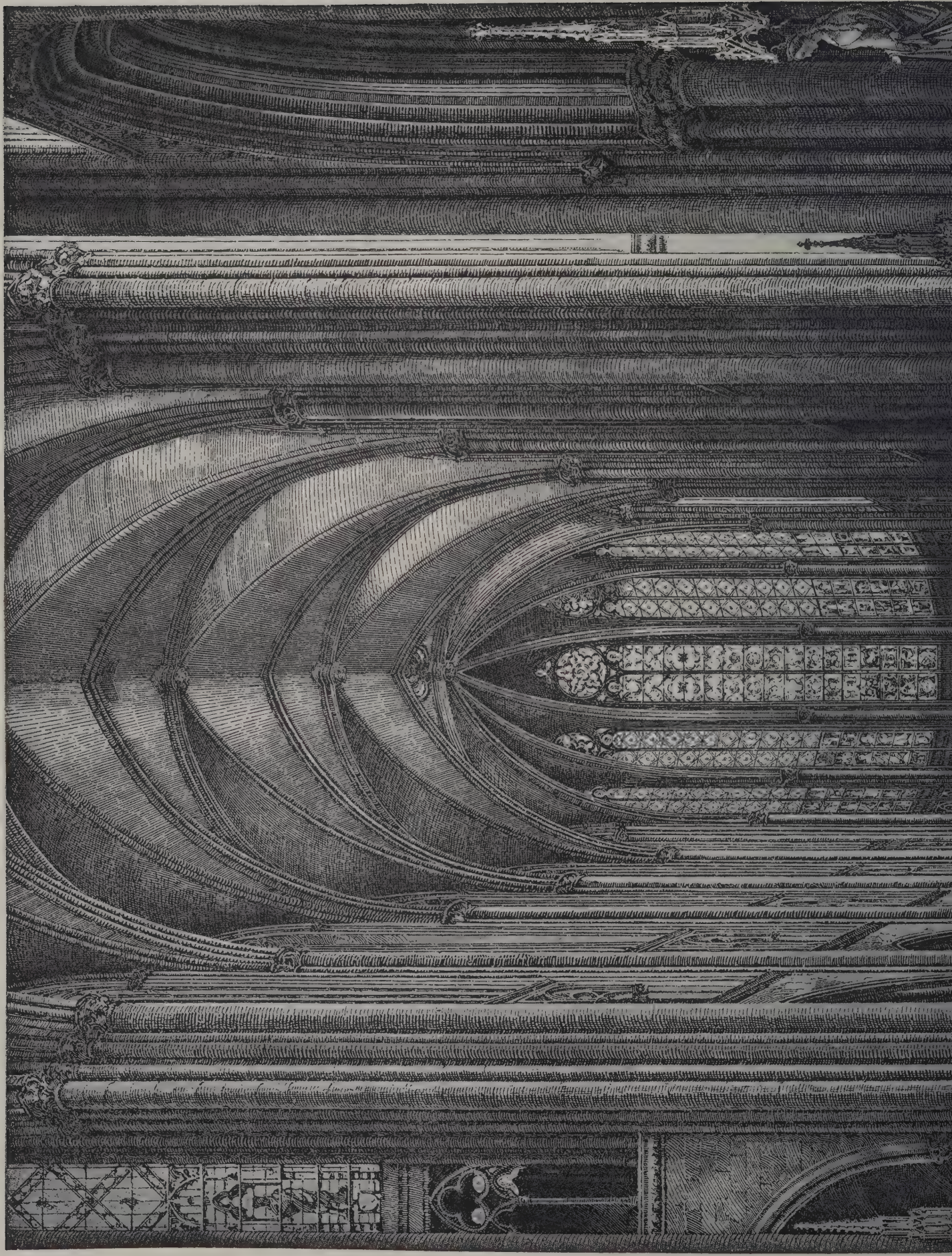
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INTERIOR OF DINING ROOM.

"BROCKHURST," EAST GRINSTEAD, SUSSEX.

MR. MAURICE E. WEBB, M.A., Architect

UNIVERSITY OF CALIFORNIA





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THE CHOIR, COLOGNE CATHEDRAL.

From an ETCHING by Mr. LAURENCE DAVIS.



The Architect.

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FORTHCOMING EVENTS.

<i>Saturday, January 14.</i>
The National Housing and Town Planning Council's Conference on "Town Planning in Practice" at the Alpine Club, W.
<i>Monday, January 16.</i>
Royal Institute of British Architects : Mr. Halsey Ricardo on "Cardinal Medici's Pleasure House."
Illuminating Engineering Society : A discussion on "Library Lighting," to be opened by Mr. J. Duff Brown (Islington Public Libraries) and Mr. S. L. Jast (Croydon Public Libraries).
Royal Academy : Lectures on Painting by Sir W. B. Richmond, K.C.B., R.A. (3) "The Great Idealists."
Liverpool Architectural Society : Mr. L. P. Abercrombie on "Some Notes on the Street Architecture of Paris and Vienna."
<i>Tuesday, January 17.</i>
Nottingham Architectural Association : Exhibition of Designs for a Small Detached House in a Garden City, and criticism by Mr. E. H. Heazell.
Manchester Society of Architects : Students' Meeting. Mr. E. Cairns on "Domed Architecture and Coloured Decoration."
<i>Thursday, January 19.</i>
Royal Academy : Lectures on Painting by Sir W. B. Richmond, K.C.B., R.A. (4) "The Art of the Future."

THE PLANNING OF A TOWN.

IN the critique which we published last week of the drawings submitted in the town-planning competition for Ruislip Manor, Middlesex, our reviewer touched upon several points that seemed to have been forgotten both by competitors and assessors, and it may, therefore, be perhaps worth while to give some consideration to the matters that are of importance in the planning of a town.

When an architect sets himself to design a town plan, what is the first thing to which he should give attention? Is it not the position of the people who are to live in it? Is it to be such a town as Bournville or Port Sunlight, of which virtually all the inhabitants are employed by one firm, who, for the sake of the happiness, health, and consequent efficiency of their employes, practically make a grant from their establishment charges account towards the expense of housing their workers at lower rents than will pay a fair interest on the capital laid out?

The architect who has to plan such towns as these is in a very different position from him who has to contrive that his scheme shall return a satisfactory dividend on capital expended, as at Letchworth or Hampstead. These are not charitable institutions, but business propositions, in which philanthropy requires 5 per cent. for its benevolence. Letchworth is partly a manufacturing town, partly residential. Some of its inhabitants earn their living near their homes, others have to travel daily to and from their place of occupation. Hampstead, on the other hand, is purely residential, a suburb of the Metropolis, with the centre of which it is within cheap and easy access. Thus the conditions of the two are quite dissimilar.

Speculative builders make fortunes or become bankrupt exactly in accordance with the correctness or incorrectness with which they gauge the class of tenant for whom they build. If they are right in their forecast, their houses let as soon as they are erected; if they are wrong, the houses remain empty or unfinished till the claims of mortgagees and locked-up capital bring about disaster.

So it will be with the clients of an architect who plans a town which has to stand on a commercial basis. No amount of pretty pattern designing, civic centres, open spaces, closed vistas, or stately avenues will pay a dividend if the plots or the houses are too large or too small for the people who are prepared to become tenants. Instead, there will be vacant sites and empty houses, which will not only absorb unprofitable capital, but will damage the reputation of the town to an extent that will tremendously handicap any attempt at revision of the scheme.

An estate or town with a bad name will be long in attracting any tenants at all, even if a fresh start is made.

It is clear, therefore, that the very first step of a town planner is to determine the class of inhabitant and the character of the town, whether industrial or residential; if industrial, whether the workers are employed near their homes or have to travel considerable distances, as in the case of the London County Council estates, White Hart Lane, and the rest; if residential, whether the householders have to travel afield for their daily business or are to any considerable extent of independent means.

Upon what we have called the character of the town will depend many further important matters—the relative proportion of the areas of open spaces and building plots, the provision of places of amusement and social intercourse, clubs, institutes, libraries, &c.; for a town is not merely an assemblage of houses and gardens, open spaces and roads, but includes many other things, which will vary in accordance with the character of the town. Motor garages, for example, will not be required in very large numbers if the houses are all of 30l. a year rental or less, while public baths and wash-houses need scarcely be provided for the inhabitants of houses at 100l. a year rental.

In fact, the planning of a town must start from the same data as the planning of any other piece of architecture, the extent and the nature of the accommodation required. The number of shops to be provided demands careful study. What would be ample provision for Hampstead, from which a few minutes and a few pence will take the ladies to Tottenham Court Road or Charing Cross, would be utterly insufficient for Ruislip Manor or Letchworth.

Although in these days of week-ending churches and chapels are not so well attended as they were a quarter of a century ago, sufficient provision must be made for places of worship; while facilities for education must be ample whatever the character of the town, though the type of schools and their number will vary to some extent. As our reviewer pointed out, in some of the designs for Ruislip Manor the provision for these essentials was absurdly inadequate.

Having settled what buildings, houses, shops, factories, and communal institutions are to be included, the architect of a town should next consider the question of facilities for traffic and intercommunication, not only between the various parts of the town, but also between it and its environment. If the town is a residential suburb of some larger town or city, to which a considerable number of the inhabitants travel daily for their business occupation or for pleasure, the access to the railway



From a Drawing by "SANS PEUR."

"THE ARCHITECT" STUDENTS' SKETCHING AND MEASURING CLUB.

This shows an old cottage on the Green, Ely, with the church of St. Mary in the background. The cottage is an interesting study of the use of half-timbering, although the bays shown are of modern date. The whole forms a very pleasing picture.

station must be made as direct and short as possible. Connection with the main roads of the surrounding district must also be easy and rapid in every case.

In the internal system of communications, the shopping centres and the communal institutions should be so located that, if possible, no inhabitant should have further to go to them from his home than three-quarters of a mile. The designer of a town is thus led to commence the consideration of his road plan, and is brought face to face with the choice between the Franco-American school and the German, the preference between the stately avenue and the closed vista. Not that it is necessary to rigidly adhere to either one or the other; a compromise or a combination between the two may very well be adopted by the British town planner.

The natural features of the site of the future town must at this point be taken into account, and the lay-out of the road plan must have reference to the contours as well as to the levels. High-lying land ought to be carefully conserved for residences, and preferably for homes of brain-workers, who nowadays are sufficiently aware that their efficiency is very largely influenced by the number of feet above the Ordnance datum at which they sleep. Low-lying, swampy land, if such unfortunately exists on the town site, ought, as far as possible, to be devoted to open spaces, a point that was recognised in many of the plans submitted in the Ruislip Manor competition.

Contours ought to be regarded as essentially determinant of the road plan, so that road gradients may be reasonable, and sewers may have a regular and, as far as possible, even inclination. Dips in roads, although a characteristic of many of our older turnpikes, based on the methods of the Roman occupation, are illogical, and entail

unnecessary expense in sewerage that might be avoided by proper planning.

Aspect must also be deemed of vital importance in laying out the road plan. Other things being equal, that town will be the healthiest in which the greatest number of the houses face east and west rather than north and south.

When all these practical matters have been given their due prominence, then the architect of a town may begin to think how he can incorporate them in an artistic and beautiful setting, how to arrange his civic centres and other points of interest, his vistas and scenic effects. Last of all, he should concern himself with the devising of a pretty pattern on the map. In the vast majority of cases symmetry of plan will be utterly wrong, for only on the rarest occasions will the best alignment of roads on one side of an axis be duplicated by the best alignment on the other.

NOTES AND COMMENTS.

It is to be hoped that our British competition promoters will not borrow the smart idea of the Greek Ministry of the Interior in their international competition for a Court of Justice at Athens. Each competitor has to contribute a sum of two hundred drachmæ, or eight pounds sterling, towards the honorarium of the jury. Of course this sum is no great addition to the cost of the drawings for a building to cost 160,000*l.*, but British architects do not want any further impositions just when they have succeeded in inducing the Royal Institute to advocate, in the new regulations, the reduction to some extent of the fearful waste of time and money that is the inevitable accompaniment of the system of open competition and its worst feature.

A CONFERENCE is to be held at the Alpine Club tomorrow, Saturday afternoon, at 3.30 p.m., under the auspices of the National Housing and Town Planning Council, to consider the subject of "Town Planning in Practice." This will have especial reference to the Ruislip-Northwood Council's town planning scheme, and will afford participants in the Ruislip Manor competition a grand opportunity for discussion of the principles that they think ought to be observed in planning a town.

THE report of the proceedings of the Council of the Hartley University College, Southampton, at which was discussed the proposal to institute a competition among architects for the new buildings which it is anticipated will ultimately cost some 100,000*l.*, is very satisfactory, and shows that there is among the English public a desire to do the right thing if only this is pointed out to them. By the advice of a Southampton architect, Mr. GUTTERIDGE, the Council retracted from their first *faux pas*, took counsel with the President of the Royal Institute, and followed his advice and that of Mr. HARE, whom he recommended as assessor. The Hartley Council is in rather an awkward position, as, whilst they wish to have a building that will cost 100,000*l.*, they have only got between 12,000*l.* and 13,000*l.* subscribed. We gather from the report of the interview that their Acting President, Mr. C. G. MONTEFIORE, had with Mr. HARE that, although the competition is to be for a 100,000*l.* building, the winner is not likely to have the chance at present of carrying out more than 35,000*l.* worth of work, and may very possibly have to cut this down to 20,000*l.* The assessor's fee is based on 100,000*l.*

WE are glad to learn that it is officially stated that the Vatican museums and galleries will not be closed during the great Art Exhibition which is to take place at Rome this year, despite the rumour that has been in circulation.

BIRMINGHAM is proceeding steadily with its town-planning schemes, and that for Quinton, Harborne, Edgbaston, and Northfield has reached the stage of Local Government Board inquiry under the Housing, Town-planning, &c., Act, 1909. At the inquiry there was very little opposition to the general lines of the scheme, and that little was not of a serious character, as stated by the Town Clerk in his reply. In the Corporation's scheme for East Birmingham the notices have been served and the required time has elapsed between such service and the application to the Local Government Board for permission to prepare a town-planning scheme. In connection with this scheme the Corporation has the opportunity of purchasing a farm of about eighty-two acres for 11,000*l.*, and the General Purposes Committee proposes to do this with the sanction of the Council and the Local Government Board.

LIKE all Acts of Parliament, the Housing and Town-planning, &c., Act, 1909, seems to require legal interpretation before its meaning can be understood by those who have to act under it, and the Special Committee of the Glasgow Corporation has failed in its attempt to carry out a closing order on the ground partly of technical irregularities, but chiefly because it proposed to treat a tenement containing forty-one homes as a "dwelling-house," and failed to properly specify the grounds upon which it was granted, a distinction not being made between "dangerous" and "injurious to health."

MR. WALTER W. THOMAS, M.S.A., makes a suggestion in the *Liverpool Courier* that the Liverpool King Edward memorial statue should be placed below the steps on the Lime Street front of St. George's Hall. This is less objectionable than the original much-condemned proposal, but can hardly be considered ideal. The crux of the whole matter is that the statue as designed and the Hall are utterly incongruous.

MR. SPOONER, in his lecture on "Modern Churches" before the Birmingham Architectural Association, uttered some valuable truths. He said that for practical purposes Christians might be split into two great divisions—Catholic and Protestant. The former made the Holy Communion very markedly the central act of worship, accompanied with more or less ceremonial. The other looked upon it more as a memorial, and gave great prominence to preaching. This fact had its effect on the building of the churches, because the ideas of the plan and arrangements of the buildings were different. The design of the old mediæval church was suitable to the Catholic form of worship, because it remained practically the same in essentials as it was at the birth of the Church. On the other hand, there was a great difference between the idea of our forefathers in the Middle Ages and the generally expressed idea of to-day. To-day the first thing thought of was to provide for the congregation, whereas the people of the past thought first of providing for the worship of Almighty God. They thought—and he was of opinion theirs was the truer intention—that the church should be the best and most beautiful building in the place, beautifully furnished and decorated with the best they could use. But, generally speaking; those who had to build churches had to do the best they could with the limited means at their disposal, and the difficulty of producing a beautiful building worthy of its high purpose was greatly increased thereby. It behoved them all to see to it that their standards were true. First of all they must keep in mind that the church was a monumental building—one that stood for a great, perhaps the greatest, idea—whether it were large or small. They must build solidly and substantially. The work should be economically, but certainly not meanly, done, and in such a way as to ensure a minimum of repair. Largeness and simplicity, together with good building, told much more than ornament, delightful as ornament was when it was good. It was necessary to be guided by the type of service which happened to be the custom in the particular parish—he meant whether the service was rich in ceremony or comparatively plain. The building should be so designed that it would be suitable for full ceremonial, because a church was built not for this generation only, but for other generations, and it would then be suitable for the plain service as well as for the other.

THE contrast between Cathays Park and some of the homes of the people of Cardiff is saddening in the extreme, and we are glad to know that the Cardiff Health Committee have awakened to a sense of their duty in regard to certain areas in Cardiff which are badly lighted and cleansed, and where the housing conditions are far from satisfactory. It is pitiful to read of some of the things that the Committee saw in their visits and of the pathetic clinging of the poor residents to the miserable hovels that they called home. The Committee rightly decided to make closing orders, on the ground of "not fit for habitation," in regard to premises in Nora Street, Little Frederick Street, Williams Court, Hills Street, and to request the medical officer of health (Dr. Walford) and the city engineer (Mr. Harpur) to prepare a scheme in regard to certain areas off John Street areas. The Committee further decided that every member should be supplied with a copy of "Thompson's Handbook to the Housing and Town-planning Act, 1909," published by the National Housing and Town-planning Council. If Mr. BURNS could point to no other results of the Housing and Town-planning, &c., Act, 1909, than the suppression of these ancient slums in Cardiff he would be fully justified in his efforts with that measure.

EDINBURGH is getting on very slowly with its purpose of a King Edward Memorial. Plenty of people have made suggestions, and an invitation has been sent to their authors to submit details of their proposals. The Committee who have the matter in hand, in order to be in a position to recommend, require to examine the various schemes in some approach to concrete shape, with



From a Drawing by "SANS PEUR."

"THE ARCHITECT" STUDENTS' SKETCHING AND MEASURING CLUB.

Market Place, Hexham.—This sketch is taken from underneath the old Moot Hall, and shows the old Market House of Georgian design, with elegant Doric columns, while beyond is seen the north transept of the Early English Abbey, recently restored by Mr. Temple-Moore.

financial and practical particulars. Unfortunately, in no case have such necessary details been forthcoming. Up to the present there has been no response to the invitation. The proposals put forward are still in their original state of nebulosity. This is exactly what is always happening. Those who would be thought "experts" write to the *Times* and other newspapers and make suggestions for all sorts of wonderful schemes for remodelling London or some other city, but never vouchsafe any indication of the cost or of the possibility of finance, beyond general and unreliable statements of the vaguest description.

THE two-page drawing by Mr. HAROLD OAKLEY, the well-known architectural perspective draughtsman, which appeared in the *Illustrated London News* of December 31 adopts a method of delineating the interior of a building—in this case Drury Lane Theatre—that is far more easily comprehended by the Philistine than plans and sections, and is quite a favourite on the Continent, where possibly its prevalence has something to do with the more intelligent appreciation of architecture by the public than is unhappily the case among ourselves.

"THE ARCHITECT" STUDENTS' SKETCHING AND MEASURING CLUB.

WE have received only two sets of measured drawings for the December subject, a pulpit, although we gave a wide range of date from 1200 to 1800 A.D. Both of the examples selected are of late date.

"L'Quayt" has measured and drawn a good

eighteenth-century pulpit in Bolton Percy Church, Yorkshire, and "Sans Peur" a good example of seventeenth-century date in St. John's Church, Newcastle-on-Tyne.

Both the contributors have done their work well, and we shall divide the prize for December equally between them.

"THE ARCHITECT" TRAVELLING STUDENTSHIP TOUR, 1910.

By CHARLES HENRY WALSH.

ALMOST every architectural student at some time in his career makes a journey to the wonderful Gothic buildings of East Anglia, and those who have experienced it can well imagine the tension of a student hurrying across country to see those great buildings of which he hears so much and as yet has not had the opportunity to behold. Such were my feelings as I left Yorkshire to see some of the arts and methods of our mediæval builders in East Anglia.

After arriving on a bright August Saturday at King's Lynn, I made my way through the narrow streets to discover some of the objects of interest in the old town. St. Margaret's Church, perhaps, occupies the premier position with regard to size and importance. It is a magnificent structure. The great length of the nave and choir add much to the dignity of the interior. An interesting feature is the passage in the clerestory wall, which at one time ran round the whole church, and is still to be traced at the east and west ends. The church

has evidently been altered and restored at various periods; consequently there is a strange admixture of feeling in the detail of the various parts.

Sunday afternoon tempted a walk to Castle Rising, a great Norman stronghold, which affords a fine conception of how those lawless barons feared neither king nor law. The great earthworks and moat still surround the castle, which contains many objects of architectural interest. Castle Rising church is well worth visiting—a rather small building, but having a very rich Norman west front and an interesting Norman font. Another object of interest is the old market cross, standing close to the church, and in a remarkably good state of preservation.

On Monday I went to the village of Terrington, about six miles to the west of Lynn, to all appearance a simple agricultural centre, and yet possessing a fine Perpendicular church. In plan it takes the form of a Latin cross, with rather short but lofty transepts, and a lantern tower over the crossing. Some remains of a thirteenth-century building are still visible at the east end—e.g. the beautiful sedilia and piscina illustrated, a window on the north side of the chancel, and the doorway into the vestry. This sedilia was discovered some thirty years ago and carefully restored under the direction of the late Sir ARTHUR BLOMFIELD. The Perpendicular font is also interesting, with its peculiar painted cover, although the colour seems to blind one to the elegance of its form.

On Tuesday I continued my tour of Lynn. St. Nicholas, a chapel of ease to the parish church, is a very handsome building. The plan consists of a nave and aisles running the whole length of the church, and a south-west tower and south porch. The main building dates from the fifteenth century, but some traces of a thirteenth-century building are to be found in the lower portion of the tower. The original spire was blown down in 1741.

Other work of note in the town are the Custom House, a charming little piece of Renaissance; the Chapel of the Red Mount, supposed to have been designed by the architect of King's College Chapel, Cambridge, on account of some similarity in the vaulting; and the Grey Friars Tower and Town Hall. Almost all the streets in Lynn have some architectural interest, but they are too numerous to see or describe in so short a visit.

Wednesday took me to Wisbech, a town of little interest, but a good centre for its interesting surroundings. St. Peter's Church is most peculiar, containing two naves and chancels, as it were, and two aisles. The earliest work is Norman, seen in the north arcade. The southern arcade and the arches dividing the chancels are of the fourteenth century, and a Perpendicular arcade divides the naves. The fourteenth-century font is rather interesting, and also the bell tower, standing alongside the north-west corner, but difficult to appreciate on account of its confined situation.

On Thursday morning I walked to West Walton, a distance of about four miles from Wisbech. The detached church tower can be seen from the road for a distance of a mile, and a very fine sight it is. No student could resist sketching it. Of course the detail of this church is too well known to need description, but one cannot help dwelling upon the delicate and exquisitely carved capitals of the arcades, and also the fine composition of every part of the thirteenth-century work. What great artists those men must have been! It is a matter of regret that this beautiful building should be kept in such an untidy state, especially as it is a place of worship. Could not something be done to petition the removal of such unsightliness? I think an effort is due from architects, who derive so much benefit from this glorious work.

Friday again took me to West Walton to complete my drawings, although weather conditions were not very favourable.

Saturday brought more rain; still I went to Leverington—a distance of about three miles from Wisbech—to make a sketch of the south porch, perhaps the most in-

teresting feature of the church. The earliest work, which is thirteenth century, seems to be in the lower portion of the tower and in the chancel, with alterations made in the fourteenth and fifteenth centuries. The nave and aisles appear to have been rebuilt in the fifteenth century. There is some good fifteenth-century glass in the south window of the chancel, and an old oak lectern in the shape of a raven.

Saturday evening I went to Peterborough.

On Monday morning I commenced a study of that great Norman cathedral. It is known too well to need any comment; but I might add that a very fine view of the west front may be obtained from the Palace garden, thanks to the kindness of Mrs. GLYNN, who pointed it out to me and allowed me to see it.

On Tuesday I took train to Thorney Abbey Station, and walked to Crowland, some six miles away, a dreary walk over flat, uninteresting country, but well worth the trouble. What a fine building this abbey must have been, although the ruins convey little idea of its original size, as only the north aisle and north-west tower remain, with some portion of the west front and nave. The plan of the abbey originally took the form of a Latin cross, with aisled transepts, apsidal east end, with ambulatory running round the choir, nave, north and south aisles, central and north-west towers. The north aisle has always been used as the parochial church of Crowland, and seems to have been originally constructed for a separate purpose from the rest of the Abbey.

I completed my sketch at Peterborough on Wednesday morning, and in the afternoon took train to Ely. Here again one has a subject which is very well known; but it becomes more interesting, perhaps, by comparison with the cathedral at Peterborough—e.g. take the central towers of each and compare the dignity of Peterborough with the grace and ingenuity of Ely. Both of the same period, one cannot help again noting the high æsthetic quality of the thirteenth-century work in the choir. How cleverly those builders introduced the lines of ornament into arch mouldings and jambs of openings to break the monotony of line, and, again, the skilful manner in which they arranged the conventional leaf ornament in the mouldings of the Galilee porch. It seems to strike a dominant note in all their work—that of a little ornament in the right place, and not too much of it.

THE NOTTINGHAM ARCHITECTURAL SOCIETY.

A MEETING was held at 64 St. James Street, on January 3, when the President, Mr. Robert Evans, jun., F.R.I.B.A., presided over a large attendance of members and visitors.

The subject of the paper was "Notes on the Town Planning Act, 1909, from an Architect's Point of View," by Mr. E. R. Sutton, F.R.I.B.A., the Vice-President, who had obtained the loan of several town planning schemes.

Invitations had been sent to the Nottingham City Council and the surveyors to the local district councils, and a number of these gentlemen showed their interest by being present.

Mr. Sutton said:—As I fear my paper on the Town Planning Act will be somewhat "dry," I will start with a few observations on the plans exhibited on the walls.

The first plan is the Hampstead Garden Suburb. This estate was laid out by a special Act of Parliament, freed from hampering by-laws. Roads 20 feet wide are permitted if they do not exceed 500 feet in length, and the houses are not less than 50 feet apart. Another interesting feature is, that the committee handed over to the public 80 acres out of the 320 for an extension of Hampstead Heath.

The original cost of the land was about 500*l.* per acre. Not more than twelve houses are erected on each acre. The Trust commissioned the well-known architect, Mr. Lutyens, to design the whole of the buildings in and around the central square. The purchase of the estate was completed on May 1, 1907, and there are now about 750 houses erected.

The second scheme exhibited is the Harborne Tenants, Ltd. In this, the parks, open spaces, play grounds and allotments have been as far as possible located on back land. The circular green towards the west end of the estate is an instructive example of the economy to be effected in town

planning. If the by-laws had allowed a narrow roadway around this green in the manner originally planned the cost would have been considerably reduced. The average number of houses per acre on this estate is just under ten. About ten acres of land out of the fifty-three have been reserved as open spaces.

The third example, Bournville, is four miles from Birmingham. In 1895 Mr. George Cadbury, the senior member of the firm of Cadbury Brothers, commenced the work of building a model village near the factories of the firm. In 1900 the estate was handed over to a trust on behalf of the nation, the whole income of which is to be devoted to solving the housing problem. The village now extends to 458 acres. Over 100 acres have been laid out for building, and the total number of houses is nearly 600. The death rate at Bournville is remarkably low. In 1904 it was 6.9 per 1,000, as compared with 19 per 1,000 in Birmingham. The death rate for Nottingham last year was 14.2. This is our lowest death rate on record, but I hope when our town-planning scheme is fully developed, we shall be able to compete with Bournville's 7 per 1,000.

The last scheme I desire to call your attention to is Letchworth, about thirty-five miles from London, known as the First Garden City. This is the practical outcome of Ebenezer Howard's book "Garden Cities of To-morrow." In this book the author suggests dealing with the evil of overcrowding in towns by building new centres of industry. The estate was purchased in 1903, consisting of about 3,818 acres, of which about 1,300 acres are to be covered by the town proper, while the remainder will be kept as an agricultural belt around. The factories and gas works are placed to the east of the estate, near the railway sidings. As the wind blows chiefly from the west this arrangement helps to keep away their smoke and noise. The municipal and other important buildings will be in the central square. From the architect's point of view, what is most lacking at present is dignity. The number of small houses each on its own plot, with varying roof-lines, cannot be expected to produce the restful effect which will be possible when the central area is developed. There is, however, one great redeeming feature with regard to Letchworth. The authorities commissioned one of our members, Mr. Heazell, to design and carry out one of, if not the most, important building on the estate, namely the church. It is hardly necessary for me to say this is a most dignified and beautiful piece of work.

I have, in conjunction with my friend Mr. A. E. Heazell, put together a few notes on the Town Planning Act. It was originally our intention to give a short account of our impression of the Conference held in London last October. With this object in view I kept a most elaborate diary, which, if any member is sufficiently interested, I shall be pleased to produce.

The author of the "Town Planning Act" is, of course, the President of the Local Government Board, Mr. John Burns, and on his own confession it was produced mainly by eating his breakfast at Mowlem's Wharf, at dinner time going to the cloister precincts of Westminster Abbey, and by playing in Battersea Park thirty-five years ago.

The "Housing and Town Planning Act," as you are doubtless aware, is an Act to amend the law relating to the housing of the working classes, and also to provide for the making of town-planning schemes.

The "Housing of the Working Classes Act" was passed in 1890, and the Act we are discussing, commonly known as the "Housing and Town Planning Act," in 1909. The Bill was submitted to Parliament in 1908, and on the second reading it was referred to a grand committee, which consisted largely of experts, and was the subject of close examination for 23 days. In 1909 the Bill received the Royal Assent and became law. The Act is divided into four parts. Part I., the Housing of the Working Classes; Part II., Town Planning; Part III., Medical officers, appointments, &c.; Part IV., Supplemental. I propose to limit my observations to Parts I. and II.

In Part I. there are fifty-three sections, a number of which are complicated, owing to the fact that they are what is known as "legislation by reference to other Acts." There are, however, some provisions in this part of the Act which may be useful to the architect. The first seven sections deal with acquisition of land, loans to local authorities, payments, &c.

By Section 4 the "Public Works Loan Commissioners" are authorised to lend to a "public utility society" up to two-thirds of the value of the property in place of one moiety as previously. A "public utility society" is defined as a society registered under the "Industrial and Provident

Societies Act, 1893." The rules prohibit the payment of any interest at a rate exceeding 5 per cent.

Section 6 provides for the local authority contributing towards the cost of laying out and constructing any street or road, on the condition that those streets or roads are dedicated to the public.

Section 8 provides for the local authority accepting a donation of land or money, or other property, for any of the purposes of the Housing Acts, and it is not necessary to enrol any assurance under the "Mortmain and Charitable Uses Act, 1888." Sections 10 to 13 relate to "Powers of enforcing execution of Housing Act."

Sections 14, 15, and 16 refer to "Contracts by Landlord," and are perhaps of sufficient interest to examine in detail.

Section 14 provides that "In any contract for letting a house, the rent of which does not exceed in London 40*l.*, in a borough or urban district (having a population of 50,000 or upwards) 26*l.*, houses situate elsewhere 16*l.*, there shall be implied a condition that the house is at the commencement of the holding reasonably fit for human habitation." Under the 1890 Act the limit was London 20*l.*, Liverpool 13*l.*, Manchester and Birmingham 10*l.*, elsewhere 8*l.*

In England the general rule of law is that except in the case of furnished houses, there is no implied contract on the letting of a house that it is "reasonably fit for habitation."

Section 15 provides that the landlord shall keep his property in all respects reasonably fit for habitation. The landlord or local authority may, on giving twenty-four hours notice in writing to the tenant, enter any house to which this section applies for the purpose of viewing the state and condition thereof. If it appears to the local authority that the undertaking implied is not complied with, they shall (if a closing order is not made) require the landlord (within not less than twenty-one days) to execute such work as the authority shall specify necessary. The landlord may within twenty-one days after receipt of notice declare his intention of closing the house. Thereupon a closing order shall be deemed to have become operative. The local authority have power to do the repairs, &c., and recover the expenses from the landlord. The landlord has right of appeal to the Local Government Board as to the executing of the work, and against recovery of expenses.

Sections 17 to 21 refer to "Closing and Demolition Orders."

Section 17 is an important one from the surveyor's point of view. Under this clause it is the duty of every local authority to make from time to time an inspection with a view to ascertain whether any dwelling houses in their district are in a state dangerous or injurious to health. If any house is found in such a state an order prohibiting its use for habitation shall be made, until it is rendered fit. Notice shall be forthwith served on the owner. Any owner aggrieved by the order may appeal to the Local Government Board, by giving notice within fourteen days. When a closing order has become operative the local authority shall serve notice of the order on every occupying tenant of the house in respect of which the order is made and (within a period not less than fourteen days) he and his family shall cease to inhabit the dwelling house. In default he shall be liable on summary conviction to be ordered to quit the house within such time specified in the order.

The local authority may make to the tenant an allowance on account of his expenses in removing as may be determined by the local authority with the consent of the owner. If the owner fails to consent to the sum determined, the allowance shall be recoverable by the local authority from the owner.

If the local authority are satisfied that the house has been rendered fit for human habitation they may determine the order. If on the application of the owner the local authority refuse to determine a closing order, the owner may appeal to the Local Government Board by giving notice within fourteen days after the application is refused.

In Sub-section 7, "A room habitually used as a sleeping place, the floor of which is more than 3 feet below the street level, shall for the purposes of this section be considered so dangerous or injurious to health as to be unfit for human habitation if the room is not on an average 7 feet high." If, however, a closing order is made in respect of such room, it shall not prevent the room being used for purposes other than those of a sleeping place. A demolition order does not apply to this sub-section.

Section 18.—When a closing order has remained operative for three months the local authority shall take into

consideration the question of demolition, and shall give the owner notice of the time and place at which the question will be considered. The owner is entitled to be heard. After being heard the owner will be told that if he is aggrieved he can appeal to the Local Government Board.

If the local authority is of opinion that the dwelling house has not been rendered fit for habitation, and steps have not been taken to render it fit, and that the continuance of any building being (or being part of) the dwelling house is dangerous or injurious to the health of the public, or the inhabitants of the neighbouring dwelling houses, they shall order the demolition of the building.

If the owner undertakes to execute forthwith the works necessary, the local authority may postpone the operation of the order for such time sufficient for the work, but in no case to exceed six months.

The owner may appeal to the Local Government Board by giving notice to the Board within twenty-one days after the order is served on him.

Sections 19, 20, and 21 are more for the solicitor than the architect.

Sections 22 to 29 deal with improvement and reconstruction schemes. The sections which concern us most as architects are 22, 26, and 27.

Section 22 deals with "unhealthy areas." The amending words "that the most satisfactory method of dealing with the evils connected with such houses, courts, or alleys, and the sanitary defects in such area is an improvement scheme" are substituted for "that the evils connected with such houses, courts, or alleys, and the sanitary defects in such area cannot be effectually remedied otherwise than by means of an improvement scheme."

I don't know if I have made the point clear. The sanitary defects might be effectually remedied otherwise than by means of an improvement scheme, yet if an improvement scheme was a more satisfactory method of dealing with the evils an improvement scheme may be carried out.

Section 26 provides for the inspection of "unhealthy areas." Under Section 5 of the principal Act, any twelve ratepayers may complain to the medical officer of health of the unhealthiness of an area. Thereupon it is his duty to inspect. Should the twelve ratepayers be dissatisfied with the report, they may now appeal to the Local Government Board, and on security for costs being given, a qualified medical practitioner must be appointed to report. Apparently the Local Government Board could not before this appoint one of their own officials to make the inspection and report.

Section 27 is an amendment as to right of easements. The principal Act provided "that all rights of way and easements shall be extinguished upon purchase of land for a reconstruction scheme."

Now if the person entitled to any right of way or easement consent, the right need not be extinguished.

Sections 30 to 35 refer to amendments respecting financial matters, which I do not propose to touch upon.

Section 43 is interesting. It reads:—"It shall not be lawful to erect any back-to-back houses intended to be used as dwellings for the working classes," but provides for certain exceptions as in the case of houses containing several tenements where the medical officer of health certifies that effective ventilation is secured.

Part II. of the Act is of a permissive nature. The general provisions are intended to promote co-operation between local authorities and land owners, and to remove difficulties in the shape of conflicting by-laws which prevent local authorities from acting jointly in a comprehensive scheme.

I propose to examine in detail the several sections which are important from the architect's point of view.

Section 54 provides for the inclusion in a town-planning scheme of any neighbouring lands. Before, however, any of the local authorities are justified in preparing a scheme with reference to any land within the neighbourhood of their area, they must satisfy the Local Government Board that there is a *prima facie* case for making such a scheme. Any local authority may be authorised by the Local Government Board to adopt with or without modification any such scheme proposed by all or any of the owners of the land comprised therein.

The scheme may include any land likely to be used for building purposes, for providing open spaces, roads, streets, parks, pleasure or recreation grounds, or for the purpose of executing any work incidental thereto. It may also include land already built upon, or that is not likely to be used for building purposes, if it appears to the Local Government Board that such land should be included, and provision may be made for demolishing or altering any building

thereon, so far as may be necessary for carrying the scheme into effect.

What land may or may not be included rests in the first instance upon the decision of the Local Government Board, but if an objection be presented, a public inquiry must be held in the locality before the matter can be settled.

A proposed scheme may be varied, or a subsequent one may be substituted, if the Local Government Board should think fit, or the scheme may be revoked entirely. In any case it does not become operative until it has been formally approved by the Board. If objection is made to it it does not become valid until it has been confirmed by Parliament.

Section 55.—In any scheme containing provisions for suspending any statutory enactment, by-laws or regulations, say in order to relieve the promoters of unnecessary expenditure on road construction or other works, such scheme does not come into force until a draft has been submitted by the Board for the approval of Parliament. When the land proposed to be acquired is situate in London, or borough or urban district, the Board must appoint an impartial person, not in the employment of any Government Department, to hold a public inquiry and report whether the land proposed to be acquired is suitable, and without detriment to the person interested, or the owners of adjoining land. If after receiving the report the Board confirm the Order, otherwise than subject to the recommendations contained in the report, their order is rendered a Provisional Order, and does not have effect unless confirmed by Parliament.

Section 56.—The Local Government Board may make regulations as to the mode of procedure to be adopted with respect to applications for authority to prepare or adopt a town-planning scheme. These regulations were published on May 3, 1910, and the following is a short summary:—

First of all the local authority must give two months' notice to all owners and occupiers of land likely to be affected and advertise their intention to apply for permission to prepare a scheme. They must deposit for inspection a map on the 25-inch Ordnance scale of the land proposed to be included and arrange to give any necessary explanation.

The local authority before making an application for permission to prepare a scheme shall consider any objection made to them in writing by the owners or other persons interested in the land included. The local authority shall arrange for at least one conference with owners or other persons interested. They are further required to arrange for at least one meeting. Notice (not less than fourteen days) of such meeting is to be served on all owners.

A copy of all objections must be forwarded by the local authority to the Local Government Board as part of the information required, when permission to prepare a scheme is applied for. If the Local Government Board give authority for the scheme to be prepared, notice must be served again on the owners of land included. When the local authority have fully decided on the scheme a draft has to be printed, further maps and particulars prepared and deposited for inspection for twenty-one days. The local authority must again serve notice on the owners and a public meeting must be held, as prescribed for the first stage of the proceedings. If the Local Government Board approve the scheme notice must be published in the local newspaper, and must also be given to the several owners. Any interested person objecting to it must make his objection in writing to the Local Government Board, not the local authority this time.

Section 58 provides "that any person whose property is injuriously affected by the operation of a town-planning scheme is to be compensated, if he make a claim within the time limited (which must not be less than three months after notice of approval of the scheme is published), but where the scheme increases the value of other property the owner is liable to pay to the authority one-half the amount of such increased value. Any question as to whether the property is injuriously affected or increased in value and as to the amount to be paid as compensation either to the landowner or from the landowner to the authority responsible, is to be determined by a single arbitrator appointed by the Local Government Board, unless the parties agree on some other method of determination."

Section 59 provides for the insertion in any town-planning scheme of the height and character of, as well as the space about buildings to be erected, and the number of such buildings.

Section 60 provides for the purchase of any land in the scheme by agreement or compulsorily. The basis of value is left an entirely open matter, and no allowance is to be made on account of the purchase being compulsory. This appears to clash with the rights of ownership as generally understood. It seems rather a one-sided arrangement to com-

pel an owner to sell his land without making him some allowance beyond the ordinary selling value to an outsider, and to accept a price that is fixed by an arbitrator of the Local Government Board.

This finishes my notes on the Act itself, but I would here remind you that in Nottingham a start in "Housing Reform" has already been made, and Dr. Milner, the chairman of the Nottingham housing committee, in a recent address, pointed out "that there were three main principles in this reform:—(1) Ending or mending existing insanitary property; (2) prevention of similar evils; and (3) maintenance of improvements effected."

"The housing committee proceeded under the second part of the Act, which enabled them to improve individual houses at the expense of the owner, not the ratepayer. After the first year's work 347 houses were dealt with at a cost of 226l. 14s. 6d. to the Corporation, including administration expenses. At present the committee had a large number of houses scheduled, and the work was increasing to a very large extent. The great desire of the committee was to work amicably with the owners of property, and so far there had been no difficulty in the matter. Nevertheless they were determined to enforce their demands."

With a view of realising how necessary it is to have an Act like the Town Planning Act so that the land may be laid out to the best advantage, I have obtained the following particulars:—The population of England and Wales between 1891 and 1901 increased at the rate of 12.2 per cent., and in 1901 was 32½ millions.

Between 1891 and 1901 as much as 576,000 acres of land was transferred from rural to urban districts, and the quantity of land withdrawn from cultivation during that period was nearly 484,000 acres, which latter area increased between 1891 and 1907 to 624,000. These figures indicate that the quantity of land withdrawn from cultivation between 1891 and 1907 was nearly 42,000 acres per annum, or nearly 4 times the area of the city of Nottingham.

The population of England and Wales is increasing at the rate of nearly 400,000 a year, and the average annual area of land withdrawn from cultivation would thus be rather over 100 acres per 1,000 of increased population.

The following figures show how greatly the density of the population has increased during the last century:—

In 1801 there were 152 persons per square mile, or 4.20 acres per person; in 1851 there were 307 persons per square mile, or 2.08 acres per person; in 1901 there were 558 persons per square mile, or 1.15 acres per person. The average number of persons in each inhabited house in England and Wales in 1901 was 5.19, in London 7.3, and in Bradford 4.1.

Under the modern methods of development adopted in different towns for housing the artisan classes the average number of persons to the acre varies from 44 to 65 per acre. In Shoreditch there are about 180 persons to the acre.

In a scheme comprising first-class villas, the average would be probably four houses to the acre, or twenty to twenty-four persons.

The rule which housing reformers have endeavoured to follow is not to have more than twelve houses to the acre.

But unless special arrangements can be made as to road construction, and the land purchased for a sum not exceeding 300l. per acre, or 1s. 2d. per yard, such houses cannot be provided to let at rents of less than 6s. per week.

In Port Sunlight where the land cost 240l. per acre, or just under 1s. per yard, the total cost of each house has been as follows:—

Cost of land one-tenth of an acre at 240l., equals 24l.; cost of cottage, roads, &c., 330l.; total, 354l. This sum, taken at the moderate rate of 4½ per cent. to cover interest and depreciation, represents a net weekly rent of about 6s. 2d., and with repairs and other incidental expenses will amount to not less than 8s. per week. The actual rent paid is 5s., and the balance is made up out of the profits of the business. At Bournville, Mr. Cadbury has from the very first insisted that the rents should show a 4 per cent. return on the capital, with the result that the rents are not within the means of the poorer working men.

Our town-planning scheme, if not actually made in Germany, appears to have originated from there. The Germans have been the first to recognise the advantage of a general scheme of building development. Owing to the great increase of population and rapid development of trade since 1870, there has been remarkable extension of many towns.

The overcrowding of houses was much more pronounced than in this country. Taking ten of the principal towns in Germany in 1890, each house on an average was occupied by no less than twenty-nine persons (but "a house" in

Germany often includes a number of flats). In ten of the principal towns of this country the average was six.

In conclusion, I wish to thank my friends, Mr. Raymond Unwin, for the excellent plans of Letchworth and Hampstead, and Mr. Martin for the interesting plan of the Harborne Tenants Estate, which they have been kind enough to lend me. And last, but certainly not least, my sincere thanks are due to you, gentlemen, for the very patient hearing you have been good enough to give to my paper.

An interesting discussion upon the points mentioned in the paper followed, in which Messrs. W. Burn, E. B. Crossley, H. A. Dickman, F. W. Gordon, A. E. Heazell, C. Howitt, W. Smith, W. H. Taylor, and Dr. Wray took part.

After Mr. SUTTON had replied to the discussion, Mr. ROBT. EVANS, jun., said:—I hope in future the authorities will take more interest in the extension and laying out of our towns and cities, and by looking ahead will seize the opportunities for improvement as they occur. I am sure I am expressing your wishes when I propose that our very best thanks be given to Mr. Sutton for his trouble in preparing such an important paper, and for obtaining for our inspection the loan of so many typical town-planning schemes. Our thanks are also due to Mr. A. E. Heazell, who has also obtained a lot of information on the subject.

Mr. A. DALE in seconding the proposition said Mr. Sutton has given us a great amount of information as to the working of the Act, which will be very useful.

The vote of thanks received the support of the meeting.

BRISTOL SOCIETY OF ARCHITECTS.

A MEETING of this Society, open to members and their friends, including ladies, was held on the 9th inst., the President, Mr. Foster Wood, in the chair.

A lecture was given by a member and former Honorary Secretary of the Society, Mr. F. Bligh Bond, F.R.I.B.A., Diocesan Surveyor of Bath and Wells.

The subject treated was that of "Somerset Churches," and a very fine collection of about a hundred lantern views was shown. The lecturer was of opinion that the Perpendicular style and its transition from the Geometrical was developed in these churches at a very early date. So much so that Somerset may be regarded as the home of this phase, and it was probably carried thence by ecclesiastics to the Midlands, East Anglia, and other parts of the country. Another beautiful feature of the Somerset churches is that of the characteristic square towers built as a result of the wonderful perfection in campanology attained during the fifteenth century. Many interiors were illustrated and described specially with reference to the Celtic and Saxon types of planning as they affect the screening of the chancel and width of its arch. Examples were shown of Jacobean and Carolean screens, which, as at Crocombe, include praiseworthy attempts to replace, in measure, the work destroyed by the decree of Queen Elizabeth, who ordered all rood lofts to be taken down. Even some of the early Hanoverian work may be considered fairly harmless, but anything later than the first George was usually incongruous and debased.

On the motion of Mr. G. C. Lawrence a very hearty vote of thanks was accorded to Mr. Bond for his lecture.

ILLUSTRATIONS.

BROCKHURST, EAST GRINSTEAD, SUSSEX.

WE this week illustrate some of the details of Mr. MAURICE E. WEBB's work at this house, of which we gave general views and plan in our last issue.

TRAVELLING STUDENT'S SKETCHES.

WE give reproductions of two more of Mr. WALSH's drawings, made during his tour as our Travelling-Student last year.

THE BILLIARD-ROOM, SILVERDALE, KINGSTON HILL, SURREY.

THIS is from a pencil sketch of the interior of a billiard-room lately added to a house at Kingston Hill for Mr. O. E. Burton. The building is of Georgian character, Crowborough bricks being used, and the roof covered with Wrotham red hand-made tiles. The work has been well carried out by Messrs. G. P. and H. BARNES, builders, of Streatham Park, S.W. The architect is Mr. BURKE DOWNING, F.R.I.B.A.

THE HOPBIT, LITTLE BADDOW.

THE drawing of this unpretentious country house, by Mr. ARTHUR BARTLETT, F.R.I.B.A., was exhibited in last year's Royal Academy Exhibition.

THE ILLUMINATION OF INTERIORS.

By Professor J. T. MORRIS, M.I.E.E.

(Continued from last week.)

EFFECT ON EYE OF DIFFERENT MODES OF LIGHTING.

THE remarkable adaptability of the eye, which has already been referred to, is, as is well known, due to the powers of contraction which the pupil of the eye possesses, so that it can automatically cut down the light entering the eye, thus tending to keep the intensity of light

by noting the numbers of the graduations across the pupil obtained the diameter of the latter. An electric lamp was placed as shown in fig. 2, the angle between the line of the telescope and the rays of light falling on the eye being about 30°. A series of measurements of the areas of the pupil was then made at varying candle-powers: (a) when the eye was looking direct at the lamp, (b) when it was looking direct at the telescope. Three persons were experimented upon, and the results obtained are given in Table IV. Attempts to photograph the eye were not successful, owing to the fact that the size

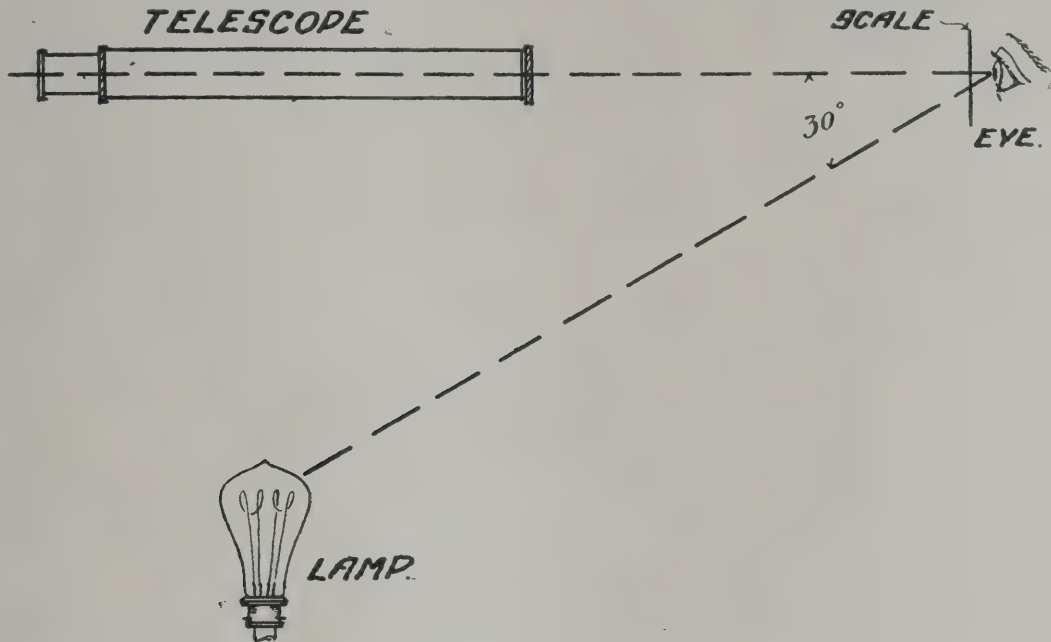


FIG. 2.

falling on the retina more nearly constant. When faced by a very bright light the eye not only adapts itself by contraction of the pupil, as is well known, but the upper eyelid is also frequently used to reduce the light. In this con-

of the pupil is constantly changing, thus giving a blurred picture. It should be borne in mind that with low illuminations there is naturally great difficulty in ensuring accuracy in the observations, owing to the fact that the pupil cannot

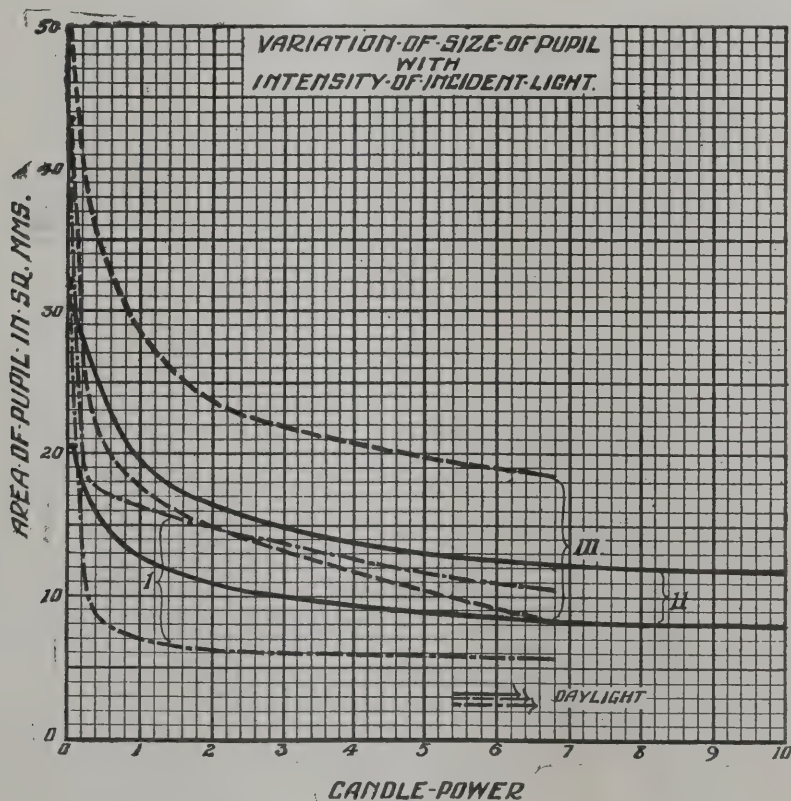


FIG. 3.

nection the following experiment was made at the East London College:—

The person whose eye was to be tested held a transparent millimetre scale as close as possible to the eye. A second person looked at the eye through a telescope, and

readily be seen.* The figures, however, are given for what they are worth. Tests were also made in broad daylight.

* [There is an apparent error in the observation for Person II. at 0.70 candle-power, and the graph in fig. 3 is probably a more correct expression of the facts.—ED.]

TABLE IV.
(All Areas in Square Mms.)

Candle Power.*	Area (Looking Direct at Lamp).	Area (Aside).	Ratio Aside Direct
* The lamp used was a 10-volt 8-c.p. clear bulb Osram.			
Person I.—			
6.80	5.55	10.15	1.83
1.70	6.15	15.20	2.50
0.25	9.30	17.90	1.93
0.05	32.10	43.40	1.35
Person II.—			
15.00	7.50	11.30	1.51
6.80	8.05	11.95	1.48
3.40	9.30	13.85	1.49
1.70	12.50	19.25	1.53
0.70	13.50	17.60	1.30
0.25	13.90	27.30	1.95
0.08	20.40	30.20	1.47
Person III.—			
6.80	8.00	18.10	2.26
1.70	15.20	24.50	1.61
0.25	23.80	38.70	1.625
0.05	40.60	50.00	1.23
Daylight Observations:—I. 2.5 square mms.			
II. 3.2			
III. 2.9			

Fig. 3 shows the results drawn to scale. It will be noticed that when looking slightly away from the direct

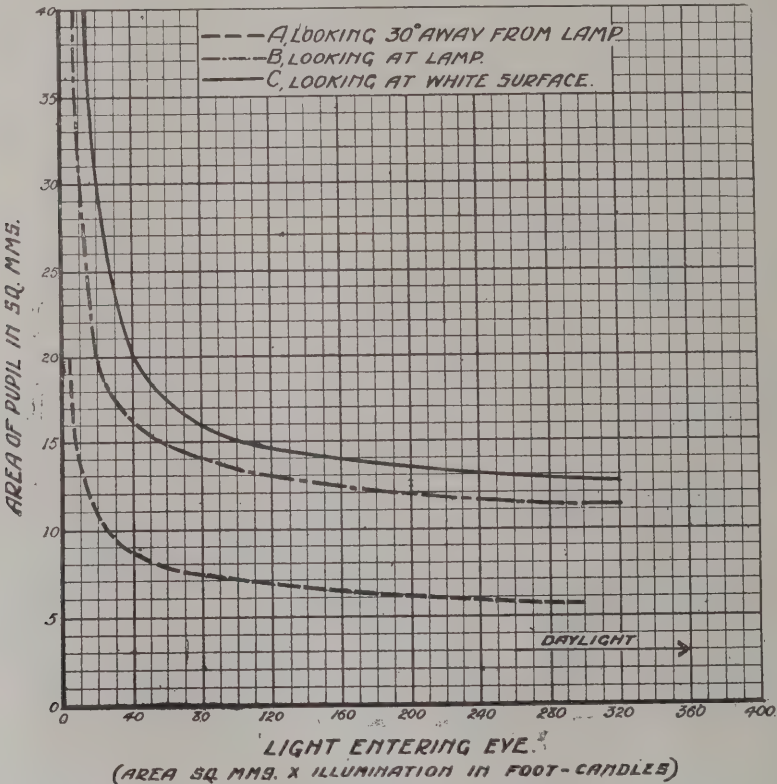


FIG. 4.

rays the pupil opens over 50 per cent. It is quite likely that in this position the eye is more strained than when looking direct at the light and with the pupil contracted. It is also noticeable how large a difference exists between the sizes of the pupils of different people.

TABLE V.

Area of Pupil. Square Mms.	Light Entering Eye.		
	A.	B.	C.
40	—	8.5	13.5
30	—	10	20
20	3.5	18.5	40
15	6.0	55	100
12.5	15	200	320
11	17.5	300	—
9	31	—	—
7	100	—	—
6	200	—	—
5.6	300	—	—
C. Looking at white surface.			
B. " lamp.			
A. " 30° from lamp.			

An attempt to analyse still further these results is given in Table V., and shown graphically in fig. 4, where the product of area of pupil and the foot-candles

at the eye is plotted against candle-power. Had the graph been a straight horizontal line it would mean that the amount of light falling on the retina of the eye for all candle-powers was the same. This, however, is only approximately true, and only for brightly illuminated surfaces.

It would appear from these results that the area of the pupil of the eye must alter between much wider limits in the case of a rapidly fluctuating illumination for a feeble light, than for a brilliant one.

Further, the effect on the eye of the background against which the lamp is seen is of material importance. It is well known that if a lamp bulb is frosted the lamp when alight is more restful to look at than when the bulb is clear. It is not so well known that if a white background be placed directly behind the lamp this combination is more restful to look at than the lamp alone. To study this subject the following experiment was carried out: A naked 240-volt 45-c.p. Osram lamp was fixed at a distance of 10 feet from the observer, and was examined under three conditions by two observers—(a) the lamp alone, (b) the lamp with a plane mirror placed behind it, slightly inclined, so that both the lamp and its reflection could be seen, and (c) the lamp with a piece of white paper placed

close behind it. Both observers stated that (c) was decidedly the most restful arrangement to look at of the three. The areas of the pupils were measured, and the mean values for a number of observations gave the following results:—

- (c) Naked lamp, white paper behind . . . 110 %
- (a) " " alone . . . 100 %
- (b) " " with mirror behind . . . 85 %

It will be seen that not only is the lamp with the white paper behind it more restful to look at, but at the same time the area of the pupil of the eye is largest for this arrangement, and therefore more light enters the eye. Both considerations, therefore, lead one to the conclusion that of these three arrangements (c)—i.e. the naked lamp with the white paper behind it—is the best.

Possibly the greater restfulness noticed in the case of the white paper may be due to the fact that the dark spaces between adjacent lengths of brilliant filament are filled up with a brightly lighted surface. It would therefore appear that not only does the eye resent extremely sudden changes in illumination in point of time, but also it objects to extremely sudden changes in illumination in point of space.

(To be continued.)

THE ARCHITECTURAL ASSOCIATION.

AN ordinary general meeting of the Architectural Association was held at Tufton Street, W., on Monday last, January 9. The nominations of Mr. W. J. Allcorn, Mr. H. G. Wicks and Mr. G. W. Cape were announced; also the election to membership of Mr. Raymond Unwin and Mr. A. O. Hector, and the reinstatement of Mr. A. S. Dorrell.

Mr. ARTHUR KEEN, the President, announced that the first Spring Visit will take place on Saturday, January 21, to the Law Courts Extension.

Mr. H. H. STATHAM then read the following paper entitled:—

Architecture Considered as Plan and Section.

Many years ago there appeared in the *Westminster Review*, in the days when that periodical was an intellectual power in the land, a remarkable article on "Winckelmann and Greek Art," which to some extent coloured my feelings about art for the rest of my life. The author, as I learned long afterwards, was Walter Pater, and the article was probably his earliest essay on æsthetic subjects. In the course of it, speaking of the distinction between architecture and the arts of sculpture and painting, he said:—

"The arts may thus be ranged in a series, which corresponds to a series of developments in the human mind itself. Architecture, which begins in a practical need, can only express by vague hint or symbol the spirit or mind of the artist. He closes his sadness over him, or wanders in the perplexed intricacies of things, or projects his purpose from him clear-cut and sincere, or bares himself to the sunlight. But these spiritualities, felt rather than seen, can but lurk about architectural form as volatile effects, to be gathered from it by reflection; their expression is not really sensuous at all. . . . Architecture is the mode in which the artistic effort centres."

Here was a totally abstract conception of architecture, as the walling up and covering in of a space, and as capable of poetic expression from that point of view alone, independent of any considerations of style or detail. That sentence, "He closes his sadness over him, or wanders in the perplexed intricacies of things," has haunted me ever since. If you come down to the primary elements of architecture, does it not consist in laying out a plan in an effective manner, and in covering in that plan in a manner at once effective and structurally sound? I am asking you to consider architecture this evening from that point of view. There is a moral connected with it; but the moral, according to traditional usage, comes at the end.

No architect worth the name ever lays out a plan without having present in his mind at the same time the manner in which he means to roof it in; and the mere aspect of a plan on paper at once sets the mind thinking as to what the section of the building would be. But even apart from that consideration, a plan, merely as plan, has its own expression and its own suggestiveness. Does not the typical Egyptian plan at once suggest an architecture of solemnity and mystery, in which the whole plan is an anti-climax, and the mystery narrows and closes round us the further we penetrate into the recesses of the buildings. How striking it is, too, to compare the typical plans of the Egyptian, the Greek, and the Gothic temple! Is not the prevailing character of the religions to which they are dedicated expressed in the three plans? The Egyptian the plan of mystery, closing in the more as you enter it, and showing nothing externally but the entrance pylons and a blank wall; the Greek the plan of rationalism—a columnar display on the exterior, and a wide interior plan neither enlarging nor diminishing as you enter it; the Gothic the plan of aspiration, widening and enlarging to its inner and more sacred extremity. Even in comparing the archaic Greek temple with the Parthenon, we see the progress from the long narrow *cella* of Selinus to the broader one of the Parthenon, significant of the development in the direction of a more cheerful and rational religious rite.

The three types of plan referred to just now tell their own tale as to roofing. The Egyptian and Greek plans are manifestly the plans for flat roofing; the small inner apartments in the Egyptian plan might be vaulted, but there can be no sense in the forest of columns distributed over the floor of the larger halls except to uphold a flat roof; and the Greek *cella* shows no abutment for an arched roof. The Gothic plan, on the other hand, proclaims the preparation for the arched roof; we see the change in the walling, from Romanesque to Gothic, as the vault is adopted and the masses of wall pivot about and take their stand at right angles to the thrust of the roof.

As an example of the crude fashioning of a plan without any order or any dominant idea, and also of the effect of roofing upon plan, we may take Khorsabad. This is a mere warren of straggling apartments grouped on no system; it is true that this was a palace for habitation, not a temple; but why are the rooms all long and narrow? Because they were roofed by a crude system of vaulting, erected without centering, and which could not be carried out over a wide space. This is essentially an uncivilised plan. What a difference when we turn to the plan of Spalato, with its wide spacing and symmetrical arrangement! In this latter point, however, it is surpassed by the plan of the Escorial, in which the great church, which is the prominent feature, is more centrally placed than the temples at Spalato, giving a greater effect of climax. The architecture of the Escorial, it is true, is cold and uninteresting. Herrera had laid his deadening grip over the classical revival in Spain; but the plan is a magnificent one—almost inspiring in its very appearance, and it might be built over again as one of the finest things in the world. It would not be a bad subject for the Tite Prize to give the competitors the plan of the Escorial and the mission to treat it in the best Italian manner they could. Another example of a great plan is Inigo Jones's Whitehall Palace, one of the finest schemes for a great palace that has ever been conceived, like the Escorial, impressive even on paper; notice especially the splendid idea of the columned circular gallery as the State approach to the private apartments of the sovereign; an idea unique, as far as I know, in architecture. If anyone objects (as many certainly would have objected thirty years ago) that the executed portion of the building is too cold and formal in style, I reply that that does not affect the grandeur of conception of the plan. But, in fact, Inigo Jones's severe and scholarly style of classic architecture was exceedingly suitable to the dignity of a great royal palace, and had his design been carried out London would have possessed the greatest Renaissance building in the world.

One has only to turn to the plan of Versailles to see how an architect who was not a great genius could spoil an even finer opportunity. For a great royal château Versailles has an absolutely ideal position, with the great courtyard rising with a gentle slope up to the entrance front, and the other façade overlooking from a wide terrace the finest park in the world. But there is nothing great about Versailles except its situation. The detail is dull and mechanical; but even were it better the treatment *en masse* would have spoiled it. This largest palace in the world is entered in a corner, and does not contain a single staircase of spacious and monumental effect, and half the effect of the park façade is lost by the blunder of bringing out the centre block in an immense projection, so that from no point of view can one get the effect of the whole length of the façade. A very long façade may be accentuated in the centre by a slight projection, but to thrust a great mass of building out from the centre is fatal. Any projections on such a scale should be at the wings, not at the centre.

Versailles, in fact, is an immense plan with no leading or dominant idea except that of mere size. For a large plan to suggest anything impressive in the design, as a whole, there must be a dominating feature in plan which suggests a dominating feature in section. If, for instance, that square projection in the park elevation of Versailles had been a great hall crowned by a dome which would be seen from the park, as the principal object, the remainder of the building forming a background to it on the second plane, there would have been some reason in it; as it is, there is no recognisable motive. It is the same generally with any form of plan which appears to have no suggestion for special treatment of any portion of it. The Egyptian columned halls, as already observed, naturally suggest a flat roof; the one point of effect suggested is in those hypostyle halls which have the two ranks of larger columns down the centre; there we at once expect some such sectional effect as is supplied by the clerestory lighting above the smaller columns. In such a plan as that of the so-called Hall of Xerxes at Persepolis, with equally spaced columns all over the floor, there is no suggestion for any effective design in section; it is obviously a flat-roofed building, which may have had, as shown in Mr. Spiers's restoration, a general expression of palatial magnificence, but with no one point to attract the eye more than another it hardly represents an architectural thought at all; it is an architecture of mere interior display. The typical plan of a mosque, as seen in the plan of Ibn Touloun, is an example of another kind, of the equal distribution of points of support with no leading feature. This was for practical reasons. A mosque, it must be remembered, is not a temple in honour of the Deity; in the

Mahomedan creed, "the most high dwelleth not in temples made with hands"; it is simply a shelter and a place of seclusion for the worshippers, who especially congregated at the inner end of the enclosure, to pray in the direction of Mecca; consequently this portion was to be completely covered in, but for practical, not for architectural reasons; so that the equal distribution of points of support supplied all that was wanted. At Cordova the idea was carried further, and the whole area covered in, with great richness of decorative treatment; but the idea was still the same; it is a shelter, not an architectural temple. After the Turks took Constantinople in the fifteenth century, and converted Hagia Sophia into a mosque, they got tempted by the grandeur of this building into giving a new architectural grandeur to their mosques; but the mosque originally was merely a shelter, and was designed as such, and consequently presented no basis for a great and complete architectural conception.

In the Christian church there was from the first a leading idea in the special importance and sanctity of the east end (using the word in its ritual sense, for many of the Italian churches were not orientated). But the plan and section of the early Basilica church suggested no special architectural motive beyond that of the perspective effect of a colonnade or arcade leading up to the apse. If we take the plan of the old St. Peter's Basilica, there is nothing in it to suggest anything in the architectural treatment beyond the very plain and simple section which is familiar to us in illustrations. Here the transept is only a practical provision for subordinate apartments, and has not yet assumed any architectural importance. With the development of the choir and transepts the crossing became architecturally the dominant point of the design. As Fergusson quite truly remarked, the weak feature in the mediæval plan was that this central space was so small. Its accentuation in section clearly pointed to the employment of a high and towerlike structure, since the width was not sufficient for effect with anything in the shape of a domical covering. The architect of St. Sernin at Toulouse, in the Romanesque period, hit upon the real way to treat it with the class of detail in use at that time; and later the same thing was done, in equally fine style, but with different detail, at Salisbury. The introduction of the octagon crossing plan at Ely was a manifest improvement in this portion of the plan, and the design of the exterior lantern (though unfortunately not in monumental stonework) just expresses it; in this case a central spire would be out of place and contrary to both plan and structure. In England we have always retained the practice of treating the crossing as the point to be accentuated in the exterior design; an advantage which the French for the most part lost through their passion for internal height, which rendered any great erection on the crossing too dangerous. It is a question whether the more limited height of our cathedrals, with the advantage of the central tower and spire, did not produce better and more interesting architectural results.

Though the finest of the French cathedral plans are superior to the long, narrow English plan, in their effect of climax, as at Rheims, produced by the widening of the plan towards the east end, there is perhaps a greater variety of interest and suggestiveness in the English cathedral plans. And here we again come to see that the plan of a cathedral is in itself significant of the character, of the greater or less architectural interest, of the building. Bourges, for instance, is an uninteresting and prosaic plan, with no specially suggestive point. We cannot look at the plan of Florence Cathedral, with its bare, wide spacing of the piers, without instinctively feeling in it something of the hard, unsympathetic character of Italian Gothic, as compared with the more rich and picturesque character of French and English Gothic. Sometimes, again, we come on a plan which represents a distinct and uncommon idea, quite apart from the general type; as, for instance, at Charroux, with its remarkable choir on a circular plan. A still finer instance, and more suitable, too, for the ritual use of the church, is the grand plan of St. Gereon at Cologne, with its elliptical nave and the long choir opening out of it. Hardly any detail could prevent that being a fine interior. Tournai, with its apsidal terminations to the transepts, is another striking instance of special interest and character in the plan, considered merely as a plan, whether the style were Gothic or Renaissance.

When we come to consider domed churches, we recognise that, in connection with plan, they fall into two classes—those in which the dome is the main covering of the whole or the greater part of the centre of the area, and those in which it is the accentuation of a special open space which

forms only a portion of the plan. San Vitale is a celebrated church of the first-named class, which has, to my thinking, the drawback that no exterior dignity is obtained from the central dome; it is practically an internal architecture only, a defect which it shares with the greater Byzantine church at Constantinople. With all that provision for buttressing on the plan of San Vitale, something more might surely have been done with it than merely to build a thin dome as an interior shell, with a low-pitched roof over it. A magnificent example of the central dome plan is the church of the Madonna di Vico in Piedmont, which was, I believe, little known until a few years ago an enthusiastic admirer, Mr. Melano Rossi (an American with an Italian name), published a history and illustrations of it. The plan promises such splendid opportunities of effect that one gets a kind of inspiration from the mere sight of it. The plan was that of an Italian engineer-officer, Captain Vitozzi, who commenced the building in 1596; but it was not covered in till more than one hundred years after, by a young architect named Francesco Gallo; as in the case of St. Peter's, the doming over of the central area seems to have frightened two or three architects before it was finally accomplished. Whether all was done with so fine a plan as might have been accomplished may be a question; some of us may think we could have done better than that; and I should certainly like to know how Francesco Gallo managed to plant that large lantern on the top of this rather flat dome without coming to grief. It has stood, however, for three centuries.

The plan of St. Peter's as intended by Michel Angelo is of some interest, for it shows how much better a composition would have resulted if the building had been let alone instead of being lengthened out by Carlo Maderno. We should then have seen it as a pyramidal composition of which the dome was the main feature, instead of the dome being relegated to a back position in the composition, as seen on approaching the entrance façade. One weakness in Michel Angelo's plan, however, is that he has not made as much as he might have done of the apses to the transepts and choir; they are rather timid in line and proportion; we realise this at once on comparing it with San Gallo's plan, which in this respect is much bolder and finer. Why Michel Angelo, who was perfectly acquainted with San Gallo's design, should have chosen this less bold and effective treatment is perhaps explained by the fact that he was determined, whatever he did, to differ from San Gallo.

In considering the dome as the roofing of a special portion of the plan, one has to distinguish between the case of a single dome and those in which more than one dome is used. A single dome must, of course, be the covering and the accentuation of the most important portion of the plan. Where more than one dome is introduced it may be laid down that a dome is essentially a form to be employed in a square or transeptal form of plan, and not in a plan in long perspective. At St. Mark's and at St. Front, Périgueux, which probably drew its inspiration from St. Mark's, we see a principal dome at the centre, with subordinate domes grouped around it, each one the roofing of a square compartment; a perfectly suitable application of the feature. At such a church as Angoulême, a long church with a series of domes, the dome is a less suitable feature; the succession of domes interrupts and breaks up the perspective rather than assists it. The vault is the suitable form of roof for the long church, the dome for that which is developed from a square plan. Wren's first design for St. Paul's was, both internally and externally, the single-dome design, a great central space covered by a great dome. Taken as a whole, it is a far finer conception than the existing building, though in detail the model may not be in all respects equal to the latter; at all events, it shows nothing so charming as the present western towers. Externally, St. Paul's is still the single-dome design, but internally it is roofed by a series of smaller domes. I think it is impossible to turn from the original plan to that of the existing church without feeling that we are in presence of a plan very much inferior to the first one; a feeling in which I think Wren would have entirely concurred.

The importance of the element of plan is nowhere better exemplified than in the Houses of Parliament. There was a foolish controversy a good while ago as to whether Pugin or Barry ought to have the credit of the building, on the supposition that the Gothic detail was Pugin's. I doubt if the exterior detail was Pugin's, though he no doubt designed a great deal of the interior work. But the controversy was entirely beside the mark; the detail is the weakest part of the building. Its greatness consists in the grand simplicity of the plan, the centre octagon with the main corridors lead-

ing right and left to the two chambers, and in the great exterior composition of the two contrasted towers and the central lantern marking the position of the octagon; the detail is a secondary matter altogether. That plan has been copied in buildings of a similar class all over the world. The Buda-Pest Parliament House is almost a direct copy of it, with one additional point which our building wants—that the position of the two chambers is shown in the exterior design. Another example of a plan formed on similar lines is Mr. Ernest Flagg's fine competition design for the State House of Minnesota.

St. George's Hall at Liverpool is a fine example of a great comprehensive plan, the architect's intention in which was not altogether realised in execution. Elmes's idea was that the great central hall was to be a *salle des pas perdus* for the two law courts, which were to be at opposite ends of the hall, divided off only by curtains, and that there was to be a vast vista, at the opposite ends of which were to be seen the two judges sitting in state. Whether that would have conduced to the convenience or comfort of the courts was a question on which I am afraid Elmes did not trouble himself much; he thought only of a great architectural effect, and he was perfectly mad when he learned that his vista was to be closed at one end by a great organ-case. But it certainly was a grand architectural conception, whether convenient or not.

Among plans for public buildings, Bernini's plan for the great court of the Louvre is of some interest, from the effective manner in which he proposed to treat the re-entering angles of the quadrangle, by bringing them out and accentuating them in the manner you see on the plan. The inner angles of a great quadrangle are apt to be weak points in the plan, and Bernini's way of treating them is worth attention. To come to an existing example of well-thought-out and practical planning, there are few better things to be seen than the planning of the Birmingham Law Courts, by Sir Aston Webb and Mr. Ingress Bell; I believe the actual plan was Mr. Bell's personal work. It answered, I believe, all the requirements of the promoters, and you see how perfectly simple and straightforward and symmetrical it looks; but that kind of simplicity is not attained without much thought and trouble. There should be a centralisation, a backbone as one may say, in the planning of a public building. As an example of the contrary, you may take an excerpt from a competition plan for a public building, fortunately (as far as the plan was concerned) not carried out. The visitor going straight through the entrance porch is faced by a blank wall; or he may turn to the left and then to the right again to reach the crush-room through an arcade, the openings of which are not central with anything whatever. As exterior architecture the design was a fine one, but I confess I cannot understand an architect making such a plan as that.

Some of the old Renaissance mansions show the peculiarity of a close approach to symmetrical planning, but just missing it; Longleat is an example. It looks as if it had been meant for a symmetrical plan but had been drawn out in a hurry and wanted correcting. Blenheim shows the element of stateliness in planning carried, one might say, to an extreme; but in justice to Vanbrugh it should be remembered that Blenheim is what may be called a palace rather than a mere mansion; and in a palace, which is nothing if not stately, stateliness may exclusively be put before convenience. The symmetrical mansion plan, however, is apt to be a danger unless the interior arrangements will lend themselves to it. There is a plan by Mr. E. J. May—additions to Jardine Hall—which I have always admired, and which shows how a very stately effect may be given to an interior of a mansion on not a very large scale. By placing the dining-room and drawing-room at opposite ends of the house, connected by a wide corridor over 100 feet in length, he has provided for a kind of state procession from the drawing-room to the dining-room, giving the guests the impression of being in a larger mansion than they imagined. The only thing I complain of is that I think the mantelpiece projection in the dining-room, which would probably be of a monumental character, should also have been placed on the central axis of the corridor, so as to complete the vista from end to end.

As a warning, on the other hand, I may call attention to an extraordinary piece of planning taken from an actual (not recent) house. The drawing-room is cut into in a most awkward manner by a kind of promontory, the corner of which faces, not an answering pier, but the middle of a bay window, the men's lavatory is close to the dining-room door, and the door faces the hall and staircase in the most unblushing manner; the way for the dinner from the kitchen

is across the hall and past the lavatory door; and the window of the servants' hall is so placed as to overlook all visitors on their way up to the hall door. Those are certainly things to be avoided.

As a modern example of a plan which is in itself a new architectural idea, I would cite the buildings at Paris called the "Petit Palais" (though it is really a very large building), by M. Girault. This is entirely an original conception in plan; the front block forming a great straight gallery with a dome over the centre; the remaining portion of the plan forming two ranges of galleries are within another, the inner line of the building forming a semi-circular loggia round an interior garden court. This is a piece of real invention in architecture, such as we do not often meet with. The principal façade is a very stately design, and the semi-circular façade towards the garden is a very graceful example of the modern French type of classic architecture. But, as with our Houses of Parliament, the plan is what gives the building its real value.

Referring again to the idea that plan is in itself an expression of architectural design, I would suggest that even a block plan may be so regarded. When, some fourteen years ago, the Institute of Architects did me the honour to ask me to read a paper on the question of the sites for the Government Offices, I put my own idea on the subject into a block plan, which received such flattering notice from speakers at the meeting that I may perhaps be excused for feeling a little proud of it. My idea was that the Admiralty was to be completed as three sides of a quadrangle, the First Lord's house forming a central object on the fourth side of the quadrangle, with a screen colonnade on each side of it. The War Office was to face the Admiralty with a somewhat similar quadrangle, and the Commander-in-Chief's residence, or his Staff Offices, responding to the First Lord's house. An important sculptural war monument would occupy the centre of the roadway between them. All the west side of the street north of the Admiralty was to be set back so as to render it the same width all the way up, and bring the axis of the street to join the centre axis of Trafalgar Square at a point marked by the Charles I. monument, which would only require to be shifted a few yards to come into the scheme. That was what I thought might have been done if the Government could have been persuaded to spend money to do the thing on a grand scale, worthy of the nation. An important point in my mind was that a great national building of this kind should make a *place* for itself, and not merely follow the street lines. The French Government would have realised that; our Government only considers economy of building land, and so the War Office has actually been built in an irregular shape following the street lines, as if it were only a monster hotel which was to make the greatest commercial return out of every yard of ground. My suggestion was, of course, hopeless with an English Government, and never went further than the block plan; but I think you will admit that the plan constitutes an architectural idea.

And now for the moral. We have stretching for a century behind us the battle of the styles, less active and exacting now than it used to be, but still not by any means extinct. Most of us are still troubled with searchings of heart as to which style is the right one for permanent adoption; one of the considerations in working out a design for a new building still is—consciously or unconsciously—"What style shall it be in?" I am proposing to deliver you from all this, once for all, by recommending you to adopt a view of architecture in which detail, in a sense, does not matter. Professor Lethaby some time ago proposed that we should solve the problem by hunting down, as he expressed it, all the accepted detail, and beginning again with no details or mouldings, and see what we arrived at. I think that is rather too stern a gospel for general acceptance, and, moreover, that we are much more likely to come on interesting and original detail by developing on traditional lines than by evolving detail out of our inner consciousness. What I want to suggest is not, of course, that good detail is of no consequence, but that, provided it is good of its kind, it really does not matter what kind you adopt so long as the main conception of the building is a fine and effective one; and that the effect of most of the great existing buildings of the world depends on their general conception, and is to a great extent independent of the style of detail. Take, for instance, the plan and section of Palladio's Church of the Redentore. That is a church with a series of deep side chapels, and a dome covering the centre space between three semicircular tribunes. The side chapels are divided by decorative classic columns, but you know well enough that those are not essential but accidental; the essential con-

MODERN EUROPEAN ARCHITECTURE.
GERMANY.

THE CHARLOTTENBURG BRIDGE, BERLIN.—Professor SCHAEDE, Architect.

[From *Der Profanbau*

ception is a series of deep bays at the sides of the nave, and a domed centre flanked by semicircular spaces; the columns and the other classic details are not necessary to it; the same general conception might have been carried out with half a dozen different forms, and still have retained its essential character and remained a fine architectural conception. Or take the Pantheon, one of the finest conceptions in architecture; what has the classic Order essentially to do with that? In this case the detail actually spoils the main result; the Order is too small for its position and seems crushed by the superstructure. The plan and section, in other words the same leading idea, might have been carried out with much finer effect with a detail entirely different from this. Or, to refer once more to the great building which is nearly within a stone's throw of us, I put it to you that if, by the wave of an enchanter's wand, you could in a moment transform all its Tudor detail into Renaissance, the Houses of Parliament, in all the qualities which make its real architectural greatness, would still remain just what it was, and its claim on our admiration would be in no way affected. In short, the delivery from all this imaginary bondage of styles lies in the recognition of the fact that the essential element in architecture is the embodiment of an idea expressed in plan and section.

UNIVERSITY OF LONDON LECTURES ON
ARCHITECTURE.

MR. BANISTER F. FLETCHER, F.R.I.B.A., has resumed his course of lectures on Ancient Architecture, which (by kind permission of the Trustees) is being delivered at the British Museum. The opening lecture of the Lent Term dealt with a general analysis of the Roman style, showing its development from Etruscan origins together with influences from Greece. Etruscan architecture dated from 750 B.C. to 100 B.C. Roman, from 100 B.C. to 300 A.D.

Stones and bricks were used, but the main feature of Roman construction was concrete which, owing to its great strength and durability rendered possible the erection of buildings such as the Colosseum and the dome of the Pantheon. Granites from Egypt, basalt, porphyry, white and coloured marbles, alabaster, &c., were largely employed, as

well as native tufa, peperino, and travertine. We are told by Pliny that granites and stones were imported to Rome in large quantities, special wharves being constructed on the banks of the Tiber to receive them.

The religion of the Romans was similar to that of the Greeks; they worshipped the same series of Olympian deities, giving them different names, but to this was added their own ancestral worship of Lares and Penates and local cults such as those of Vesta and Egeria. The foundation of Rome is said to date from 750 B.C., and the town was governed by kings until 500 B.C., when the Republic was set up, lasting until the establishment of the Empire by Cæsar Augustus, 27 B.C., under whom building activities flourished, and were continued by the later Emperors Nero, Vespasian, Trajan, Hadrian, Septimius Severus, Caracalla, and Diocletian. In 343 B.C. Rome began her conquest of Italy, a work which took about sixty years. In 330 B.C. Etruria became a Roman state. After the first Punic War in 264 B.C., Sicily was made the first province of Rome. The third Punic War (149-146 B.C.) resulted in the destruction of Carthage, consequent on which Northern Africa became a Roman Province. Syria, Asia Minor, Spain, Greece, Western Asia, France, England, and Egypt all fell under the Roman arms and became Roman provinces between 190 B.C. and 30 B.C.

What we know of Etruscan architecture consists chiefly of tombs, city walls, gateways, bridges, and aqueducts, and these resemble in character the Early Pelasgic work at Tiryns and Mycenæ. The walls are of cyclopean masonry, and put together without mortar or cement of any kind. The main feature of Etruscan architecture is the early knowledge and use of the true or radiating arch. Before this time the arch made of bricks or stones laid in horizontal courses was the only form in use, as at the Treasury of Atreus.

The Cloaca Maxima at Rome, dating from about 578 B.C., is an excellent example and possibly the oldest true arch construction known.

It is a semi-circular vault with a span of 11 feet, and 12 feet in height, constructed mostly of peperino. It is the great sewer of Rome which carries off the water from the Forum, and drains the valleys of Rome. It is constructed of three rings of voussoirs each 2 feet 6 inches in height.

The Arch of Augustus at Perugia is another example. It is an oblique arch constructed of large blocks of travertine without mortar, and formed part of an Etruscan wall $1\frac{1}{2}$ miles in length. Augustus restored the arch after Perugia was destroyed by fire, hence its name.

There are no remains of Etruscan temples other than those found at Lanuvium (Italian—Civita Lavinia, Civita Castellana, Luna, &c.), consisting chiefly of terra cotta roof tiles decorated in colour, examples of which are to be seen at the British Museum. But to Vitruvius we are indebted for the description of a three-cell temple, dedicated to a trinity of gods, a custom which prevailed as in Egypt. The Etruscan temple was raised on a high podium which survived in the Roman rectangular temple. It was non-peripteral, thus differing from the usual Greek example, but had a prostyle portico and a flight of steps. There is at the Villa of Pope Julius at Rome a reproduction of an Etruscan temple, the remains of which were discovered in 1882 at Alatri.

Large tumuli and rock-cut tombs, the latter sometimes representing the atrium of an Etruscan dwelling, the rock being carved to represent the roof timbers, are among the remains of Etruscan examples left to us.

Roman architecture was a development of the arch and vault of the Etruscans, and the "orders" of the Greeks, which, however, were used more decoratively than constructively, as they were placed one above the other and applied to concrete walls, allowing these to do the carrying work. Two new orders were invented, the Tuscan and the Composite, bringing the number to five.

Concrete formed a most important part in all Roman construction as seen in the thermæ, amphitheatres, basilicæ, tombs, aqueducts, bridges, temples, houses, and palaces, the coverings alone of which could never have been constructed but for its strength and enduring powers, combined with the fact that there is no thrust from a concrete dome. In Carthage immense vaults of concrete, now used by the peasantry as dwellings, were formerly great stores for water; these again show its use for covering large areas without support. Concrete walls were usually faced with brick, and this again in many cases with stone, marble, or stucco.

The barrel or waggon-headed vault soon developed into the cross vault, by the intersection of one semi-circular vault by another, which cut it at right angles. This divided the long barrel vault into square compartments, enabling light to be admitted into the building. The intersection of the two vaults formed a groin, and it is held that this was built up of brick and served as a support for the concrete filling. The soffits of vaults were richly coffered, which considerably lessened their weight.

The dome of the Pantheon covers a span of 142 feet 6 inches. It is built of bricks laid in courses, almost horizontal, with thick mortar joints, and cased in concrete.

The "orders" were dealt with by the lecturer in detail, views of baths, temples, &c., serving as examples. Mouldings and ornaments were compared with the Greek, the former usually being parts of circles in profile, and less refined in conception and execution. In later examples every member was carved, which resulted in an overcrowding of detail in a desire for richness of effect.

OUR CONTEMPORARIES FROM OVERSEAS.

THE *American Architect* (New York) has given illustrations of the City Hall, Chelsea, Mass., of which Messrs. Peabody & Stearns are the architects; and the Public Library and the Winsor School at Brookline, Mass., both by Mr. R. Clipston Sturgis. The final number of the year is entirely devoted to the very excellent ecclesiastical work of Messrs. Cram, Goodhue & Ferguson, with an inspiring address by Mr. Ralph Adams Cram on "Architecture as an Expression of Religion," delivered before the twenty-eighth Church Congress of the Protestant Episcopal Church in the United States.

La Construction Moderne (Paris) illustrates two of the façades premiated by the City of Paris in 1909: No. 77 Avenue Parmentier, by M. Mourzelas; and the other No. 11 Rue Pillet-Will, by MM. Cassien-Bernard and Paul Friésé. As an example of Old Paris the Rue Sainte Croix de la Bretonnerie is described and illustrated.

Arkitektur og Dekorativ Kunst (Christiania) has an illustrated article on the west front of Trondhjem Cathedral and Herr Nordhagen's work thereat, also an illustrated description of the public baths at Darmstadt.

Het Huis (Amsterdam) completes its series of articles on Old and New Enkhuizen, and includes also illustrated articles on Norwegian tapestry and Hindu sculptures from the Siva temple at Tjandi-Praubanan, Java.

Der Architekt (Vienna) illustrates several "one-family" houses in the XIIIth bezirk of Vienna, besides a competition design for shops and flats in Königgrätz, so that the number is quite domestic.

Moderne Bauformen (Stuttgart) is chiefly occupied with the works of Munich architects. Barracks by Herr Sigismund Göschel are not devoid of architecture, but well-designed and stately buildings. Other Munich architects whose buildings are illustrated are Karl Jäger, Otto Baur, Professor Rich. Berndt, Karl Bertsch, Professor Adalbert Niemeyer, Professor Richard Riemerschmid, Paul Wenz, Professor Emanuel von Seidl, Professor Max Littman, Paul Ludwig Troost, Theodor Veil. Most of the designs are more or less influenced by "neubau" feeling, but with some regard for traditional motifs.

Stone (New York) gives an account of a terrible disaster to a reinforced concrete building at Cleveland, Ohio, when a four-storey building collapsed, killed four people, and severely injured eight others in an adjoining two-storey brick building which was crushed by its falling neighbour.

Engineering Record (New York) has an editorial note on the architectural criticisms of St. Paul's Bridge, which strongly upholds the position taken by the Royal Institute of British Architects. Such support from an unbiased and independent engineering journal is gratifying.



[The Editor will not be responsible for the opinions expressed by Correspondents.]

Ruislip Manor Competition.

SIR,—Your comments on the selected designs are admirable, but one point in connection with the competition appears to have escaped your notice.

Sixty-two or three designs were submitted, but only about fifty are exhibited, and had you been assessor one of the missing dozen (No. 23) would perhaps have pleased you.

The author of this did not "dodge the difficult slopes," but his main roads had a maximum gradient of one in forty; and where symmetry was introduced it did not involve "one-half of his pattern running uphill and the other down."

Twenty-three and a half acres provided thirty-three distinct sites for public offices, public hall, theatre, concert hall, places of worship, schools (elementary and secondary), institutes, public library and a hospital.

Seventeen acres for shops at four points.

Twenty-five acres for trade purposes such as garage, laundry, builders' workshops.

Eleven and a half acres for the same, or Territorial drill ground, and electric power station, leaving a net area of 873 acres for purely residential purposes with:—

78 houses at	1 per acre =	78 acres
150 " " 2 " "	=	75 "
200 " " 4 " "	=	50 "
450 " " 6 " "	=	75 "
2,289 " " 7½ " "	=	319 "
1,780 " " 10 " "	=	178 "
1,257 " " 13 " "	=	97½ "

(the large playgrounds are additional)

6,204 on 872½ acres

or an average of very slightly over 7 houses per net acre.

250 would be provided over the shops.

6,450 houses in all.

There is another very important matter on which you do not touch, and it concerns both the æsthetic and commercial sides of the problem.

(a) If I buy 120 acres of land at 100l. an acre it costs me 12,000l.

(b) If I set aside one-third (40 acres) for roads and open spaces I have to ask 150l. an acre for building sites to get my money back.

(c) If I set aside one-half (60 acres) for roads, &c., I have to ask 200l. an acre to get my money back.

(d) If I propose that the estate as a whole should carry

500 houses (to simplify the argument, of equal size) there will be 500 on 80 acres in (b), and 500 on 60 acres in (c). Which will sell best?

The (c) plots will each cost exactly the same as the (b) plots, viz., 24*l.* each, and will be much smaller, and the occupier will have to pay increased rates, or private subscriptions for the upkeep of the extra 20 acres thrown into roads or open spaces.

The smaller and dearer plots, of course, mean houses closer together, and shorter frontage, and the estate reverts towards "town" type instead of open country or "garden suburb" type.

The plans exhibited can show but little of this. The reports accompanying them must be searched, and at the time of the writer's visit the reports of the premiated ones were not on view, but from information published elsewhere it is noted that that placed first had near 1,200 more houses on 120 less acres, when compared with "No. 23" referred to above.

But, if we assume that Messrs. Soutar's "pattern" is the best of those exhibited, another still more important point yet remains. How are prospective occupiers to get there? Two-thirds of the estate is quite away from the railway. Northwood and Northolt stations are as far apart as Chalk Farm and Vauxhall. If any one ventures to make the journey from the City to Plots 31 and 35 Copse Wood, or Plots 31 and 35 in Park Wood, and realises that this will have to be done twice a day by the majority of occupiers, I anticipate that he will think twice before he takes up shares in Ruislip Manor, Ltd.

But the most amazing thing of all is that of the fifty exhibited designs, none show any attempt to provide communication without change of vehicles between Copse Wood or Park Wood and the City. One of the best suggests a tramway from the reservoir to Northolt station, and thence by main line train to Marylebone or Paddington, and yet further journey by electric underground. Is that good enough?

I venture to predict that long before the best parts of the estate have houses on them there will have to be a railway similar to that shown upon

DESIGN NO. 23.

[Our correspondent appears to have designed a "town" rather than what our reviewer called a "pretty pattern." The absence of competitors' reports is always a bad feature in competition exhibitions, but particularly so in this instance, as the essential merits of any design for a town can hardly be understood from drawings alone, and no doubt other competitors have realised the weak point about Ruislip Manor to which our correspondent alludes, and have suggested in their reports means of obviating it. As our reviewer noted, "catching the train" will be an important question with residents on the new estate.—ED.]

SIR,—In reading your excellent report on the Town Planning Competition for Ruislip Manor, I am very pleased to observe the emphasis you lay upon the want of value of pattern-planning, or, as I have ventured to term it before now, "the want of value of planesthesia."

It is really extraordinary that so many architects should be led astray on this point.

As you truly observe, "If the town were to be laid out on a level plain. . . its streets might as well be so disposed as not." But to disregard contours and levels for the sake of pattern-making is unworthy of a learned profession. Only to the extent that axiality and radiality serve a practical purpose should they be paid heed to.

The merits of town-planning are very far from being so pronounced as enthusiasts suppose, and I will venture to prophesy that, the first "vogue" engendered by the recent Act of Parliament once departed, we shall hear but little more of a fad that only a Radical Government could have fathered.

—Faithfully yours,

PERCY L. MARKS.

Albert Buildings, 49 Queen Victoria Street,
January 6, 1911.

PS.—I fear your correspondent "Piano-Player" will find it difficult, except by means of heavy expenditure upon abnormally thick walls, to confine sound. Has a vertical layer of slag-wool behind the plaster been tried?

SIR,—In your review of the designs submitted in this competition, and which are now being exhibited, you say in reference to my scheme that "some of the sewers seem to run uphill."

Your reviewer is evidently under the impression that all the sewers would be laid parallel with the present surface of the land, but this, of course, would not be possible; and I am

sure if you look into the matter more closely that you will find that the whole of the sewers have proper falls provided to the lowest point on the estate in each case.

I shall be glad if you will insert this letter to correct the erroneous impression created by your criticism.—Yours truly,

PERCY B. TUBBS.

68 Aldersgate Street, London, E.C.: January 10, 1911.

Llandrindod Pavilion Competition.

SIR,—I see by an advertisement in the professional papers that the Urban District Council are again advertising for competition designs for a pavilion. This is for the third time, and I take the opportunity, as a victim in the two previous competitions, of warning architects to beware.

The first advertisement appeared in October 1901, and the second in November 1907.

In the first a local architect (working jointly with the surveyor) was honoured (?) with selection, and after a great deal of wasted energy and expense in the preparation of many drawings the scheme was abandoned, and, I believe, without even a penny ever being paid for their trouble.

Five years later another advertisement appeared, asking for designs, a copy of the instructions being sent to me, although I made no application for them; but as I competed before it was supposed I might be willing to do so again, which I unfortunately was. Thinking matters might have arranged themselves fairly, I joined with the local architect who was successful in the first competition, and we acted jointly in preparing a design which was actually selected at a meeting of the U.D.C. by a large majority "for further consideration." One of the clauses in the instruction to competitors stipulated "that all designs were to be delivered *free of cost unsigned*, but each set to be accompanied by a sealed envelope bearing outside the nom de plume corresponding with the one on the drawings." To all architects accustomed to competition work this implied that secrecy was to be maintained till a selection had been finally made, and, in fact, was a virtual contract to that effect. But what happened was that as soon as our design was "selected for further consideration" it seemed to occur to the Council that they must be careful not to make any mistake, so they decided to have the envelope opened before "further consideration" put the business in the wrong hands. This was, I consider, a breach of the implied contract; and although I protested against it at a later date, they were advised that another clause of the instructions protected them from liability.

The result of the second competition was that the scheme was knocked on the head. Nine designs were returned to their authors, after being held at the Clerk's office for about nine months, and were so much waste paper, though each must have cost at least 25*l.* to prepare. But before they were returned the U.D.C. proposed to have a scheme carried out by their local surveyor, who was to prepare drawings. Now, after a considerable lapse of time apparently even this has fallen through, and the architectural profession is being invited to submit a further collection of designs for the amusement of this most enlightened Council. Surely twelve sets of drawings costing at least 300*l.* ought to be the limit of what they can expect to get without paying a penny for all the information they might have gained, and I hope all members of the architectural profession will think so, too.—I am, yours truly,

JOHN HENRY WILLIAMS.

15 Foregate Street, Worcester: January 9, 1911.

Petrol Air-Gas.

SIR,—In your issue of October 7, 1910, Professor Smith mentions the danger of storing inflammable liquids for petrol air gas machines, and suggests that reasonable care would reduce the risk to a minimum.

Will you allow me to suggest that the risk may be almost entirely eliminated by the "Snercold" system of storing and handling petrol, &c., for all purposes? The system adopted consists of an easily fusible safety plug, the solder of which melts at 157° Fahr. to prevent bursting of an enclosed tank, and a specially protected wire gauze cylinder to prevent back-fire and explosion. There is, of course, a free flow of spirit through the meshes of the gauze. I believe it is usual to fix a small protected gauze cylinder to the outlet of the tank as well as the filling opening, so that the tank is safe under all conditions.

I have seen most conclusive demonstrations of these devices in the neighbourhood, and feel sure that they are all that is claimed for them. I do not think this system is known as widely as it should be.—I am, dear Sir, yours faithfully,

T. D. PARR.

90 Langham Road, Teddington, Mx.: January 10, 1911.



*The Blind School.
York. May 1911.*

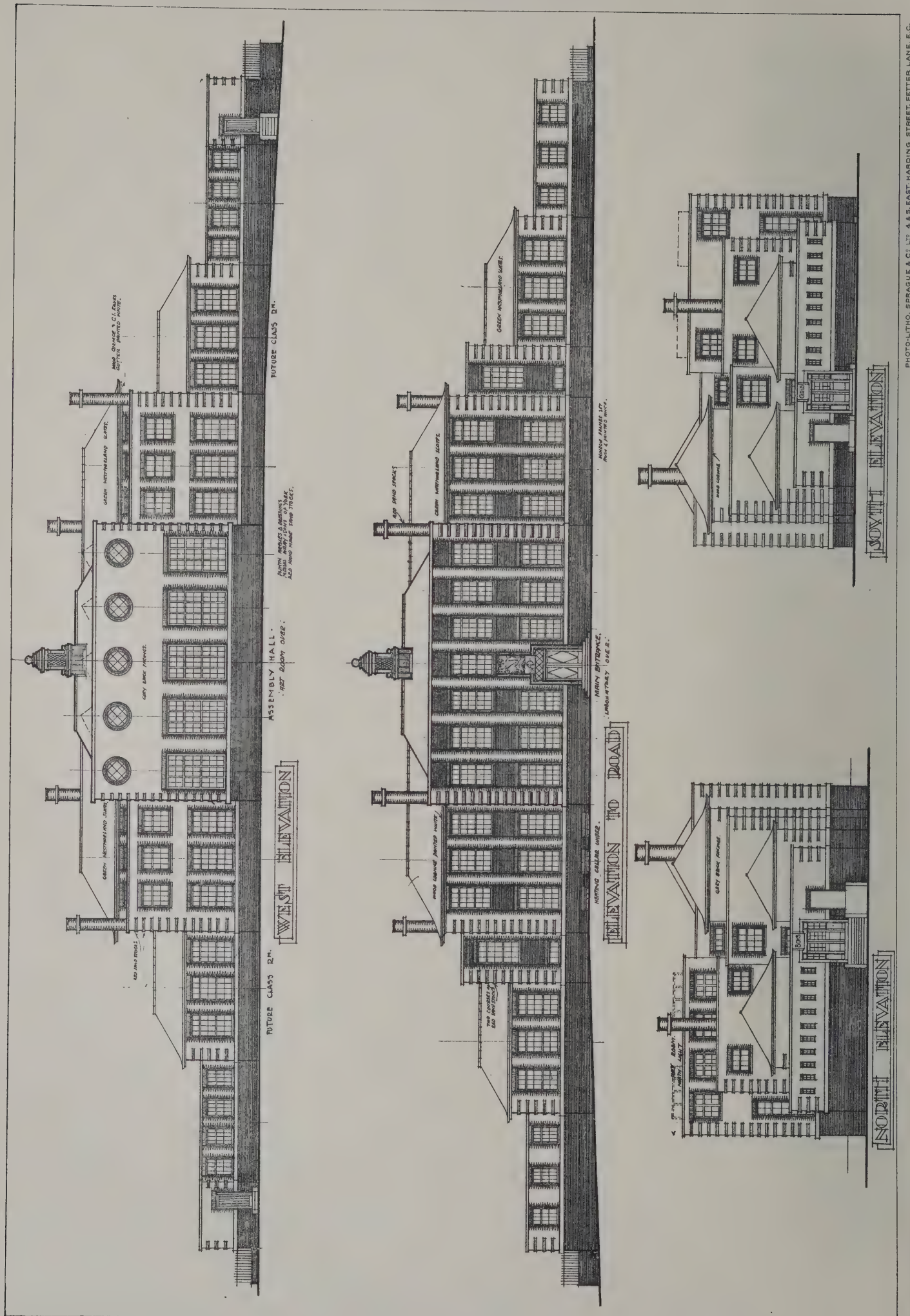
g 14th 1911.



"INK PHOTO" SPRAGUE & CO LTD 4 & 5, EAST HARDING STREET, FETTER LANE E.C.

'LE QUAYT.'

HING & MEASURING CLUB.



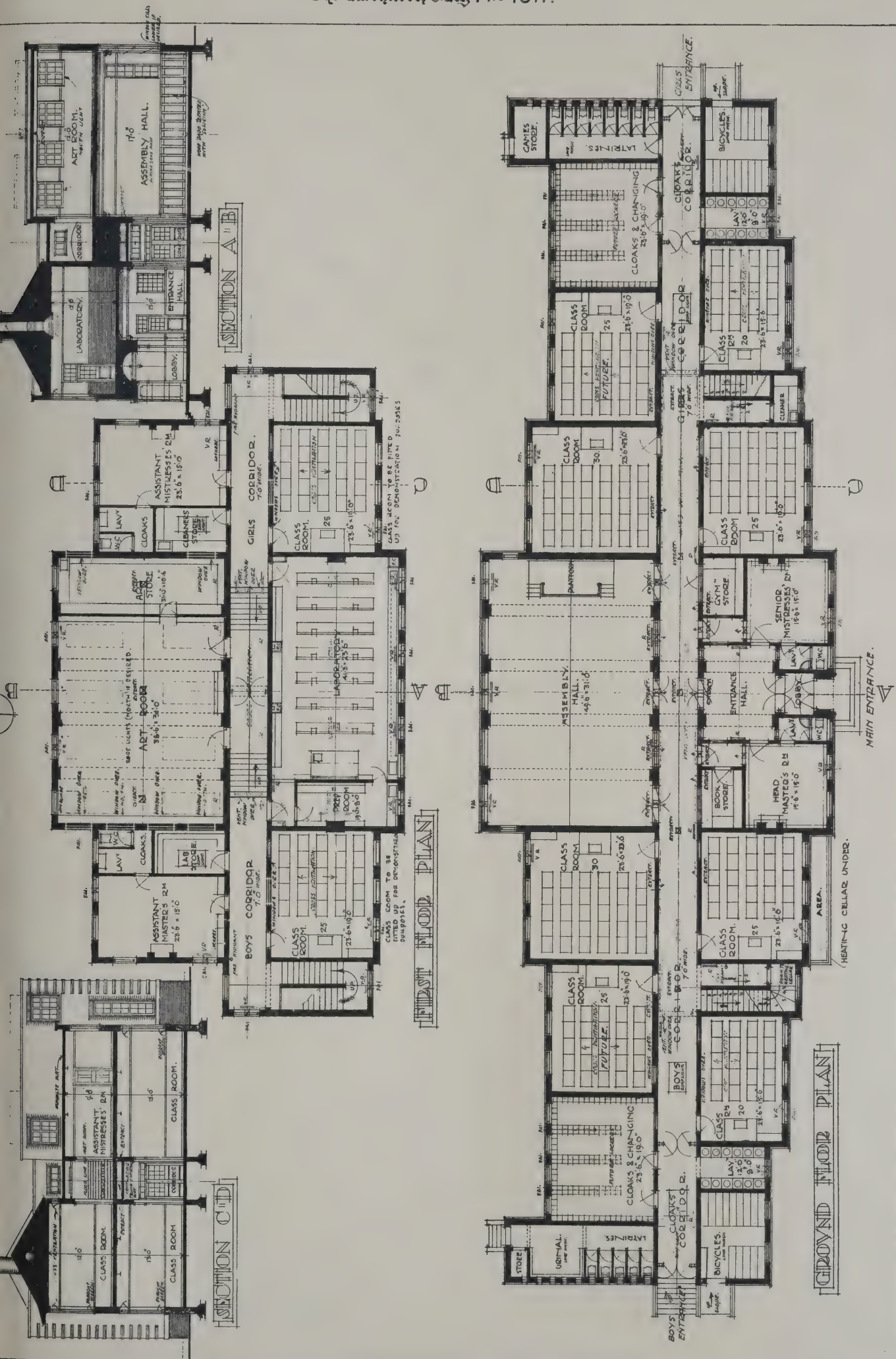


PHOTO-LITHO. SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

COMPETITION DESIGN FOR PROPOSED NEW GRAMMAR SCHOOL, PENRITH.

By Mr. EDWARD CRATNEY, Architect.

The Architect, July 14th 1911.



INK PHOTO. SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET. FETTER LANE. E.C.

CATHEDRAL SERIES, No. 676.—ELY: SOUTH SCREEN OF BISHOP ALCOCK'S CHAPEL FROM RETRO-CHOIR.

The Architect, July 14th 1911.



"INK PHOTO" SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET FETTER LANE, E.C.

CATHEDRAL SERIES. No. 677.—ELY: DETAILS IN BISHOP ALCOCK'S CHAPEL.

The Architect.

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FORTHCOMING EVENTS.

Friday, January 20.

The Leicester and Leicestershire Society of Architects : Presidential Address by Mr. W. M. Cowdell, to be followed by a musical evening.

Saturday, January 21.

Architectural Association : First Spring Visit to the Extension to the Law Courts, Strand, by permission of Sir Henry Tanner, I.S.O.

Monday, January 23.

Architectural Association : Mr. Theodore Fyfe on "The Atelier v. the Builders' Yard."
The Surveyors' Institution : Mr. W. R. Baldwin-Wiseman on "The Conservation of our National Water Resources."

Wednesday, January 25.

Northern Architectural Association : Address by J. S. Gibson, Esq., Past Vice-President R.I.B.A., on "The Policy of the Royal Institute and the Advantages of the New Class of Licentiate."
Carpenters' Company : Mr. T. Raffles-Davison on "Truth in Craftsmanship."
Manchester Society of Architects : Mr. J. L. Ball on "The East Anglian Cathedrals."

STUDENTS' DRAWINGS AT THE INSTITUTE.

FOR the Soane Medallion and 100*l.* (for Continental travel) the subject set was a design for an entrance gateway to a capital city. There were thirteen competitors. The first prize was awarded to Mr. P. MAWSON, London ("Civitas"), and the second and third places to Mr. C. PERCIVAL WARGATE ("Mauerthor") and Mr. A. DOUGLAS ROBINSON ("SLIab") respectively.

It is a sign of the times that of the thirteen designs submitted for the Soane Medallion not more than one ventured on any approach to mediæval treatment, and yet the subject as set would be almost impossible at any later date than the seventeenth century, and scarcely even likely in that. Fancy the entrance-gate to any city of modern times being on the opposite side of a river approached by a bridge. No capital city on a river has its entrance on one side with a bridge across from the open country. Lisbon and Oporto are the nearest resemblances to such a disposition, and there the river is the approach, not a bridge. Pest is certainly all on one side, but Buda is on the other, and the two are virtually one city. Thus the competitors were set a problem in the architectural conception of Never-never Land, or, as the author of the design placed second expressed it, to design "La Porte de l'ancienne Ville Jamais."

This gentleman, Mr. C. P. WARGATE, seems to us to have grasped the meaning of the problem as set better than any of the other competitors, and if his design had been rather more thoroughly mediæval and the bridge and gateway more harmonious and consonant in feeling would, in our opinion, have merited the first instead of the second place.

There can, however, be no dispute that as a piece of purely idealistic design and pre-eminently as a specimen of draughtsmanship, the contribution of Mr. P. MAWSON is easily superior to all others submitted. The composition of the great archway building with colonnaded wings is very satisfactory, and if the choice of deep wintry snow in the rendering of the perspective is somewhat theatrical it is certainly effective.

Mr. WARGATE has grafted François Premier additions on to a mediæval gateway, and produced a well-composed group; but, as we have already intimated, his bridge is not of a piece with the gateway, and has, in fact, quite a modern feeling.

An entrance to a capital city naturally enough suggested town-planning to some of the competitors, and these have set themselves to designing grand schemes of arrangement of buildings and roads, absurdly combined with a bridge sixty feet wide and a guard-house as required by the instructions. Still, in Never-never

Land such things may be quite the proper mode, and we need not even regard as ridiculous the scheme of "Black Cat," who makes his bridge lead to the back of a circular place, and has planned rather an exit than an entrance to the city.

Mr. G. DOUGLAS ROBINSON's design is the best of the town-planning type with a grandiose collection of colonnades and piazzas. The futility of the guard-house would be supreme, but as a design essentially modern, both in treatment and in drawing, even to the slovenliness of the latter, this is well worthy of the commendation it has received.

There are few designs for the Soane which have not some merit, and of those not premiated "Horatius" has perhaps taken the most serious view of the problem set. His gateway is really defensive, and an entrance to a walled city, so that the suggestion of the guard-room and the bridge in the instructions is legitimately adopted, but *quâ* design, there is not much that is inspiring. "Harlequin" has a real entrance gateway of grandiose character and well approached, that would be eminently suitable for a capital city if the guard-house and bridge were not factors in the problem. "Journey's End" has a fine upstanding mass in his gateway that could be seen by, even if it did not cheer, the traveller for many a league before he reached his bourne, but as a design it is somewhat bald in composition, and there is a lack of harmony in the scale of the parts.

The Tite Certificate and 30*l.* attracted nineteen designs. The subject set was a design (according to the methods of PALLADIO, VIGNOLA, WREN, or CHAMBERS) for a Campo Santo on a rocky island rising out of an inland lake. The prize was awarded to Mr. GEORGE HERBERT FOGGITT, London ("F. 13"). A certificate and 10*l.* was awarded to Mr. H. BODDINGTON, junr., Manchester ("Catafalque"), and certificates to Mr. W. G. NEWTON ("Ek Thanatou Nikos") and Mr. V. O. REES ("Apex").

The competitors for the Tite Prize were even worse treated by the conditions than those for the Soane, for they not only had to design a Campo Santo, but had to conceive an island on which to put it. Despite this we have the enormous number of nineteen designs, of which many are very feeble productions and some quite weird in their eccentricity.

Mr. G. H. FOGGITT's design is about the most Italian in feeling of the designs submitted, and given an island of the form he has conceived, a lofty hill, with the inside scooped out so as to form an amphitheatre, as it were, quite appropriate and effective, quiet and sedate with its terraced loggie leading up to the domed church. Geologically the author is quite justified in his island form;

we know at least two examples of such in the Home Counties, although they are no longer islands, as once they were in the distant past.

Mr. H. BODDINGTON's island is quite different, and allows him to place a central temple at the crown of the hill with spreading wings of arcades approached by easy zigzag slopes, forming a fine *mise-en-scène* which reminds one perhaps too much of a drawing that has hung for years on the Institute walls. Mr. BODDINGTON has not seen it as often as the judges, who are perhaps a little tired of the composition.

Mr. V. O. REES has imagined his island as a fairly level plateau with an acropolis, which gives him scope for a good composition with the campo below and the church above. His detail is based on Roman Classic, with only a suspicion of modernism. Mr. W. G. NEWTON must, we think, have received his award for his clever fancy, the expressiveness of his coloured perspectives, and his smartness in justifying the use of Greek detail by a quotation from the writings of Sir WILLIAM CHAMBERS, showing that he had observed the principles of that master, the study of which is the professed object of the Tite Prize.

"Spero Meliora" has a design of considerable merit which might have carried more weight if the domed church were less obviously reminiscent of St. Paul's Cathedral. Designing in accordance with the principles of WREN does not mean copying his application of those principles. "Fiat Justitia" also has approached too nearly to the same model. Although Mr. REES has been commended for a design with Greek detail, the judges could hardly look favourably on the Neo-Grec of "Naos," the more that his detail, though good of its kind, is grafted on poor composition and idea. "Black Horse" has made a great attempt at an elaborate composition, but his design would scarcely need much modification to make an excellent casino.

The Pugin Studentship, Silver Medal and 40*l.*, drew nine competitors. The studentship goes to Mr. J. B. F. COWPER, Manchester, and a prize of 5*l.* 5*s.* to Mr. P. D. HEPPWORTH.

There are no indifferent competitors for the Pugin, and no great exception could have been taken to the award of the judges if they had given the studentship to any other than Mr. COWPER, who would seem to have won by the more thoroughly practical nature of his studies, of which there is a good variety of subject.

Mr. P. D. HEPPWORTH displays a penchant for difficult and elaborate subjects in his measured work, the west front of Rouen and the south transept of Senlis, for example. His soft pencil sketches of Flamboyant work are very clever, and he has fully grasped the capabilities of a 6 B. His colour work is also good, and one can only suppose that the judges were a little prejudiced by his readiness to lavish time and labour unstintingly on *tours de force* of measurement and draughtsmanship.

As we have intimated, all the others have done good work, and the competition is very keen. Mr. LENTON has made many sketches, but few studies. Mr. ALISON has confined himself too much to Patrington and Beverley, Mr. HILL too much to Wells; but taken altogether the candidates for the Pugin make up a good team without a tail.

The Owen Jones Studentship, certificate and 100*l.*, was awarded to Mr. A. W. BELLIS. There was one other competitor.

For the Owen Jones Studentship the two applicants are at once differentiated by the fact that Mr. BELLIS has sent some very excellent studies of English, Italian, Spanish, and French work, and Mr. OAKLEY has pinned his faith to his own designs. Hence naturally the studentship goes to the student.

For the Institute Silver Medal and ten guineas (drawings) there were five competitors. The prize was awarded to Mr. T. F. W. GRANT, London ("Ethandun").

The Measured Drawings Prize has this year, for a change, gone to a set of drawings of English mediæval

work in Edington Church, Wilts, which has been very thoroughly measured by Mr. GRANT. The drawings of St. Lawrence Jewry, Gresham Street, London, by "Nihil sine Labore" are also thorough, and show an interesting building with good detail, but the drawing is in rather too heavy a line. The other subjects measured are PALLADIO's Basilica at Vicenza, by "Oxonian"; the Senate House, Cambridge, by "Cam"; and the Entrance Vestibule to Somerset House, by "Farnese," all too well-known and hackneyed for this prize of the Institute.

The Arthur Cates Prize (a sum of 42*l.*) drew two competitors, of whom the successful one was Mr. ANDREW GRAHAM HENDERSON.

Mr. HENDERSON has won the Cates Prize by virtue of his being a better and more effective draughtsman than Mr. VEX, for this prize has now virtually resolved itself into a sketching competition, rather than, as Mr. CATES intended, an incentive to good work in "Testimonies of Study" for the Institute examinations.

The subject set for the Grissell Prize (a gold medal and 10*l.* 10*s.*) was a design for a skating rink of wood construction. The Institute Council decided, however, not to award the prize to any of the eight competitors.

The Henry Saxon Snell Prize of 60*l.* for a convalescent home to accommodate 100 working-men was not awarded. There were four competitors.

The Ashpitel Prize (open to students who passed the final examinations, 1910) was awarded to Mr. J. B. F. COWPER, of Manchester.

The Essay Medal and twenty-five guineas was awarded to Mr. HERBERT LEWIS HONEYMAN, of Glasgow, under the motto "Dulce est desipere in loco." There was one other competitor.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A MEETING of the Royal Institute was held on Monday, the 16th inst., at Conduit Street, the President (Mr. Leonard Stokes) in the chair. A paper was read by Mr. Halsey Ricardo entitled:—

The Cardinal Medici's Pleasure-House.

In talking of the Villa Madama—as it is now called—the chief points of interest, said Mr. Ricardo, in the poor, uncompleted and now ruined thing is its ancestry. In the Mediæval ages scarcely ever can you get the names of the artificers; but in the days of the full Renaissance the case is different, for familiar names then meet one at every turn. One's chief difficulty is to determine how much one name covers another one, how much one underlies the other. And in this case of the Cardinal's pleasure-house—which bears the name of Raphael as its designer—one wants to know what are the architectural forbears of Raphael's ancestry. He was—we can see clearly—the son of Bramante, who was the son of Alberti and half-brother to Leonardo da Vinci.

Bramante and Da Vinci came together at the Court of Ludovico il Moro in Milan, and for seventeen years they lived and worked side by side. Both were employed on the great constructional works that powerful lord carried out at the castle. When the crash at Milan came in 1500, Da Vinci sought the patronage of the French king, and Bramante went to Rome. Bramante was already known at the Eternal City, where he had before been to measure the ruins of the Imperial masterpieces, and where the fruits of his study were arising in the form of the Cancelleria. He was soon after his arrival successful in a competition organised by Pope Julius II. for the erection of a new St. Peter's. Besides this work he was entrusted with the remodelling of the Vatican Palace and the laying-out of the approaches and general setting to the new basilica. The idea of architecturally treating the setting that environed a palace or a villa was a new one to Rome. The first stone of St. Peter's was laid in 1506. Julius died in 1513, and Bramante (aged 60) in the following year, leaving instructions in his will that his friend Raphael should carry on the work at St. Peter's. Raphael had been invited five years before to Rome by Bramante to see what could be done for him at the Vatican. The young artist's work there became paramount, and he caught some of the impassioned loftiness of Michael Angelo's and Bramante's ideals.

The next Pope, Leo X., was a young man of 37. Giovanni de Medici posed as a more ardent and better appreciator of

the arts than his predecessor. Immediately on his accession he elected his cousin Giulio as cardinal. Giulio quickly set about devising a country retreat on the slopes of Monte Mario, a mile or so outside the hot, dusty streets of Rome. It was to be the *ne plus ultra* of a pleasure-house both in beauty, in sumptuousness, and in the scholarly treatment of its decoration. Giulio himself was a scholar and enjoyed the society of men of letters and antiquarian research. So ancient authorities were consulted as to what constituted a patrician's country residence, Pliny's description of his country place in Tuscany proving a rich mine of information.

Raphael prepared various designs, and lived long enough to see the actual building started and the terraces beginning to shape themselves. His mind—eager to assimilate the word-pictures of the scholars poured freely into his ears—saw the possibilities of house and landscape gardening and at once began to materialise them. Raphael's studio was probably a kind of arts club, where all kinds of work and all kinds of discussion and argument were going on simultaneously. The artist had no time to brood over the significance of things, for the amount of business going on in his workshop must have been tremendous. The throng of pupils surrounding him were told to study and measure the ruins of ancient work, and especially the recently discovered examples of internal decoration. The ancient use of stucco enrichment was thus discovered. Raphael was quick to seize upon its possibilities, and under the hands of two of his pupils—Giulio Romano and Giovanni da Udine—the walls of the Villa Madama were encrusted with this filigree work.

The Villa Madama, after Raphael's death, was carried on by Antonio San Gallo the younger, as far as construction was concerned, Giulio Romano and Giovanni da Udine fashioning the decoration. The villa was never finished in its entirety. Pope Leo died at the end of 1521, after a reign of eight years. The next Pope, a severe and ascetic Fleming, spread dismay into polite Rome by his grim disapproval of every form of luxury and the arts. His tenure of the chair lasted little longer than a year, and then Cardinal Giulio found himself elected Pope, and took the name of Clement VII. The Villa Madama was now no longer, however, of the same importance. His cousin had rioted away the hoarded supplies of the Papacy. Trouble was brewing over the horizon in every direction, for it was within a few years of the fearful sack of Rome. Eventually the Villa came into the possession of Margaret of Parma, daughter of the Emperor Charles V., and it is from her that it derives its name of Villa Madama.

Raphael's studio appears to have been the well-head from which gushed forth that stream of pleasure residences that spread all over Italy and France and reached England. The discussions that raged over the Cardinal's project helped to constitute this building as a model of what a country retreat and pleasure-house should be. All round Rome princes and cardinals took to building in after years these country mansions with elaborated gardens, fountains, terraced walls, and sheltered arcades. Henry VIII.'s palace at Nonesuch, Shakespeare's reference to pleached alleys, Bacon's directions for laying out the gardens to a stately house, derive from this initiative of Cardinal Giulio's as materialised by Raphael; and behind Raphael stand Bramante and his co-worker Da Vinci—that wonderful man who was the fore-runner of an age that has not yet arrived.

The artists of the Early Renaissance wore their scholarship lightly. They played with the result of their researches among the antiquities of ancient Italy. The Italians considered themselves the children and inheritors of the Roman Empire, and to recover some of their past glory was a most natural aspiration. As a nation this was denied to them by conquest—local ambitions prevented any permanent or complete scheme of federation—but in art and in letters it was within their grasp to emulate and reproduce the achievements of the past. At first there was no idea of reproduction. The architects borrowed the forms they found on the ruined theatres, triumphal archways, baths, and basilicas as so much elegant embroidery to the buildings growing up under their hands, treating them as so much theatrical property, to be applied for the purpose of giving a classical setting to the everyday incidents of their lives.

But with the introduction of a critical examination into the past styles of arts and letters, and the new learning caused by the flood of Greek manuscripts that heralded the fall of Constantinople, artists and scholars were exhorted to follow the ideals discoverable in the relics and literature of the Golden Age of the Roman Empire. They were pressed to become students of "style"; their patrons considered themselves as the arbiters of what was right, and the standard of their measurement was the faithfulness of the artists'

reproduction of the times and attributes of that age. The Augustan Court was revived, the Pope posing as the premier consul, the cardinals and princes as so many Mæcenases, and life was again to be as it was fifteen hundred years ago. But, as past periods cannot really be brought to life again, amongst much scholarship that was intrinsic and earnest there was much also that was only ostentation. The play-acting element was strong. We find in the architecture of the palaces a tendency to become more and more dramatic, more adapted for splendid shows and crowded receptions. Ordinary folk made the discontented best of the careless street architecture so far as use was concerned; and gave up any idea of beautifying their own holdings, partly from inability to understand and enjoy the superfine scholarship of the palaces, and partly also because the standard of carved and painted enrichment was so high that such work was generally beyond their means, and as a commercial investment (owing to the ravages of time and the violence of street tumults) a bad one. Technical dexterity was greatly fostered by the connoisseur. It was a quality which (not being an artist himself) appealed to him, and of which he felt himself qualified to judge; and all the second-rate artists were ready to encourage and instruct him by devising canons, rules, &c., for his guidance. The playfulness and tenderness of Bramante's creations in Milan fade away in the restrained scholarship of the Cancelleria and are extinguished completely in the severe immensity of St. Peter's. Michael Angelo's vestibule to the Laurentian Library can scarcely be described as playful, but at any rate it is not priggish; but his completion of Bramante's walls to St. Peter's is hide-bound and priggish to a wearisome degree. In the matter of grandiosity he strove to go one better than Bramante, and we may confidently consider ourselves as vastly the losers by this attempt at gain.

SIR CHARLES HOLROYD, in proposing a vote of thanks, confessed that he had never been to the Villa Madama. The notion that the value of a garden to a residence should have first come from Raphael was an exceedingly pleasing one, and it seemed to accord with one's ideas of the man's nature. In regard to the relations between Bramante and Raphael, there seemed to be no doubt that, while Raphael used the older man, Bramante was his schoolmaster and not his father. The Roman villas of the Renaissance presumably came from the Greek villa. Roman villas had a regard for well-ordered gardens and well-arranged surroundings. Not very much was known about the villas of ancient Greece. Appreciation of vista and lay-out was exemplified at Pompeii, where four beautiful views might be obtained at the intersection of two streets. Looking down the different prospects one saw Vesuvius, a beautiful little bay with a town on its rocky shore, and the Apennines. In looking at the famous "The Last Supper" at Milan special attention should be paid to the two shields painted by Da Vinci above the picture, for though little known they are the most delightful and graceful pieces of work of their kind ever executed. "The Last Supper" was really the greatest thing done in paint, and was in itself enough to be the sole achievement of a man's life. Mr. Ricardo in his paper appeared to be blaming the patronage system which obtained in Italy at the time of the Early Renaissance. But, said Sir Charles Holroyd, was not Pope Julius II. rather the greatest of all patrons? If Leonardo da Vinci had been taken up before by him he might have done much more. Julius insisted on getting things done. A single patron such as he was better to manage than a town council or committee. It would indeed seem as if the best period for art was under tyranny. Mr. Ricardo had been hard on the Medici generally. The phrase that "Raphael had no time to brood over things" was a good one, for it had to be borne in mind that while his work was the outcome of the knowledge around him Raphael was a great executor rather than a great scholar. His studio was not perhaps exactly suggestive of the Arts Club to which it had been likened; it was more in the nature of a mixture of Morris & Co., London University, and the Office of Works. Everyone was running about studying remains and putting them into the first work he could. The villas were architecturally designed with their painted rooms and their sculpture in the gardens.

MR. PAUL WATERHOUSE remarked that whereas it was easy enough to second the vote of thanks to Mr. Halsey Ricardo for his paper, it was not easy to accompany it with the comments customary at meetings of the Royal Institute. Mr. Ricardo had taken his audience into the heart of the Renaissance. The fascination of that period seemed to lie in the fact that in it one got a double hold from antiquity, and in entering into its spirit one shared with the men of the past an enthusiasm for antiquity. The best thing therefore

one could do was to assure Mr. Ricardo that some at all, events of his audience had been carried in spirit into that period.

Mr. LEONARD STOKES put the vote of thanks, and it was passed with acclamation. Mr. Ricardo then briefly acknowledged it.

The SECRETARY next read the award of prizes and studentships, a list of which is given elsewhere. The meeting terminated by the President announcing that the next meeting would be held on January 30, when there will be the President's Address to Students, the presentation of prizes and studentships, and a criticism of the drawings by Professor C. H. Reilly, of Liverpool.

NORTH AND SOUTH MIMMS.*

CUSSANS, in his "History of Hertfordshire" mentions that in the time of the compilation of Domesday the distinction between the two parishes (that is, North and South Mimms) did not exist, but the whole was recorded by the name of Mimmine, and then belonged to Robert de Limesy, Bishop of Chester, by inheritance from his father, Rayner. The record reads as follows:—

"The Bishop of Chester holds Mimmine. In King Edward's time it was rated at eight hides and one virgate; now for eight hides. Arable is thirteen carucates. In desmesne are four hides, and there are two carucates there, and a third may be made. Seventeen villanes there, with eight bordars, have ten carucates. There are three cottagers and one bondman. Pasture for cattle—Pannage for forty hogs. The total value is and was eight pounds; in the time of King Edward twelve pounds. Three thanes, vassals of Queen Eddiva, held this land, and might sell it. This manor does not belong to the See, but belonged to Raynor, the father of Robert, the Bishop." A carcate was as much land as one team could plough in a year.

The manor passed through various hands from Robert de Bachesworthe and Matilda de Somery; in the year 1299 Richard, son of Robert de Bachesworthe, granted his fourth part of the manor to Simon de Swanland (or Swonland), a London merchant, and at the same time he became possessed



SOUTH MIMMS CHURCH.

of the other two parts, making three-fourths of the manor. The remaining fourth part was sold in the year 1391 to Sir Thomas Knolles, Knt. Simon was succeeded by Simon, John, and William successively. The last one sold them to Thomas Knolles, who was either the same who already possessed the fourth part or his son. The last of the name of Knolles who possessed this manor was Robert, to whom there is a mutilated brass in the church. In or about the year 1560 the estate was in the possession of the Coningsbys. In 1870 Lord Greville sold the manor of North Mimms and the estate known as North Mimms Park to Coningsby—Charles Sibthorp; by this purchase Mr. Sibthorp obtained possession of the estate of Coningsby, from which family, through the female line, he is descended. It is now the seat of Mrs. Burns.

* Read at a meeting of the Upper Norwood Athenæum by Mr. T. C. Thatcher.

North Mimms Place was built by Sir Ralph Coningsby about the year 1600. It stands in a park about a quarter of a mile north-west of the church, from whence it is approached by a magnificent avenue of elms. It is a long and lofty building of brick, with wings terminating in gables at each end. The mullions and transoms of the windows and the quoins and pinnacles are of white stone; these with the lofty,



DOORWAY, NORTH MIMMS CHURCH.

twisted chimneys and central lantern break the hard, long line of the principal roof. Over the porch in the centre of the building is a projecting bay reaching as high as the coping. The interior contains some good carving, notably a chimneypiece, over which is a large oak panel representing Pyramus and Thisbe, and dated 1563.

The old manor house was probably destroyed when the present one was erected. It was in the old mansion that the Princess Elizabeth slept on the night of February 14, 1553-4, when on her way from Ashridge to London to answer to her royal sister for her supposed complicity in the Wyatt rebellion. It is watered by a feeder of the river Colne.

There is another fine mansion in the Brookman's Park; this was erected in 1682 by Andrew Fountaine, and was afterwards purchased by the great Lord Somers, who died there in 1746. This was destroyed by fire in 1892 and since rebuilt. The park adjoining Brookman's on the south is Gubbins, or, more correctly, Gabions, where formerly stood the old manor house in which Sir Thomas More lived awhile with his family.

Mr. Tompkins, in his "Highways and Byways of Hertfordshire" (1902), barely mentions North Mimms except in a tone of apology. "I could wish to go on a pilgrimage to North Mimms, one of the prettiest spots in Hertfordshire, where Sir Thomas More lived awhile at the Gabions, long since demolished, and where at Brookman's the munificent Somers pored upon his pamphlets, books, and prints, tasting in the intervals of a busy life the sweets of literature's 'pale and shadowy, but enduring, pleasure.'"

Cox, in his "History of Hertfordshire," makes no mention of North Mimms, except one small paragraph at the end of his volume under the heading of Charity Schools:—"North Mimms, where there is a school for fourteen boys, who are clothed and, when fit, put out to apprentice; and twelve girls, taught to read and sew at the expense of a young gentlewoman." Who the said young gentlewoman is I have been unable to find out. In his list of towns and villages he places North Mimms in the Hundred of Caisho, whereas it is in the Hundred of Dacorum according to Cussans.

North Mimms Church and parsonage are in the park, half a mile from the village. The church, dedicated to St. Mary the Virgin, is of the Decorated period, and is considered to be unusually pure in style. A characteristic feature of Hertfordshire churches is the narrow, tapering,

leaded spires; a feature almost wholly absent is the apse. The church is built of flint with stone dressings; it consists of chancel, nave of three bays, aisles, south porch, north chapel, and a low embattled western tower with spire, containing five bells dated 1806, and repaired and rehung in 1901, when the chancel roof was also thoroughly repaired. Several brasses have been lost, probably when the church was restored in 1859, when all the brasses were removed from the floor. Beneath the window at the east end is an original Laudian table of solid oak, nearly square, thus enabling the minister to stand at the north side of the table, as directed by the rubric, and not at the end of it. On the north side of the chancel is a huge marble monument extending to the roof, erected by his sister, Lady Elizabeth Jekyll, who lived at Brookman's, to John Lord Somers, Baron of Evesham,



NORTH MIMMS CHURCH.

and Lord Chancellor in William III.'s reign (1689-1702), who died on April 20, 1716. A remarkable feature of this monument is that part of it consists of a solid marble door, which leads from the church to the vestry.

Under the westernmost window of the north aisle is a low altar-tomb, which formerly stood inside the Communion rail. On the cover is the figure of a lady 5 feet 8 inches long, her head resting on a cushion. Around her neck is a large ruff, and frills encircle her wrists. Her dress, which is low, is cut into three deep points across the breast. Beneath the dress is a stomacher of plaited linen, reaching to the ruff. The sleeves of the dress are brocaded, but the skirt is quite plain. The three shields on the south front are charged with the arms of Beresford of Bentley, County Derby. The inscription on this Elizabethan effigy is only in part decipherable.

There are in the church a mutilated brass to Sir Robert Knolles (d. 14—) and to Elizabeth his wife (d. 1458), a brass to Sir Henry Covert (d. 1488), and a fine old brass to Richard Boteler and Martha his wife (circa 1560).

On the wall close to the Communion rail is a brass 4 feet long to an ecclesiastic; this is thought to be a memorial to William Kesteven, vicar (d. 1361). The style of the work indicates a Flemish artist. He is vested in chasuble and stole, holds a chalice, and over him is a rich canopy, with, on the right side of the central figure, St. Peter, and underneath SS. John the Evangelist and Bartholomew; on the left side, SS. Paul, James the Great, and Andrew, with their respective emblems. Above is the Almighty holding the soul of the deceased, and under separate niches at the sides are two angels swinging censers. North of the chancel, separated from it by a low oak screen, is St. Catherine's Chapel, originally a chantry, founded by Simon de Swonland in the year 1328, for the daily celebration of Mass for the souls of himself, his wife, and of his ancestors.

The Communion plate includes a covered cup of silver-gilt, given by Charles de Laet in the eighteenth century; also, a curious tankard of carved amber, mounted with silver-gilt, given by will of Lady Mews in 1751, now lent to the British Museum. The registers date back to 1565; baptisms, marriages and burials to 1656.

The church is said to have been built by Sir Hugh de Magneville (Stephen's reign, 1135-54), but Mr. Tompkins, in his guide to Hertfordshire, says he thinks it more probable that Geoffrey de Magneville, then Lord of the Manor, was the real founder, as stated by Chauncy. The present structure is now almost wholly of later date.

From a gift in 1674 of 2 acres 2 roods 20 perches of land

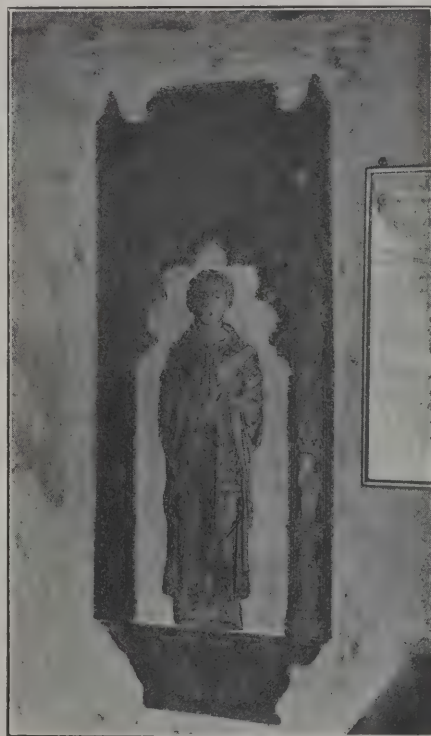
by Martha Coningsby, widow, ten labourers in husbandry, not in receipt of parochial relief, receive 10s. 6d. each Shrove Tuesday, the distribution being made by the trustees. Sabine's Charity, bestowed in 1816 by Joseph Sabine, produces yearly 2l. 14s. 8d., of which 1l. is given to the farm labourer, not receiving parish relief, who has the largest family, and the remainder is distributed in bread, meat and potatoes among all the poor widows in the parish in Easter week. Bread to the amount of 7l. 12s. 8d. is given on Sundays throughout the year; and 6l. 8s. is distributed in the same way at the chief festivals to all labourers of good character who attend church. Besides these there are several other charities of a similar description.

South Mimms.—This place in the ancient records is written as Mims, Mymmes, Myms, and even Memmine and Mymmys, and it is called South Mimms to distinguish it from North Mimms in Hertfordshire.

The survey of Domesday makes no mention of the manor of South Mimms. Thomas de Leuknore, who died in 1302, left half a knight's fee in South Mimms, under Humphrey de Bohun, Earl of Hereford, heir of the Mandevilles. Thomas, his son, had a grant of free warren in 1313, and some time after it became vested in the Crown, and was granted in 1488, by Richard III., to his zealous supporter Richard Scrope as a recompense for his good services in suppressing treasons and rebellions and supporting his right to the Crown. The manor was then valued at 44l. per annum; the fee-farm rent to the Crown was 3l. It is stated to have been in the possession of the Salisbury family as early as 1661, when it was comprised in a settlement made by William Earl of Salisbury upon the marriage of his grandson, Lord Cranbourn, with Lady Margaret Manners.

The inquisition taken in 1349 values the manor house at 4s. yearly; 400 acres of land at 4d. an acre; 15 acres of meadow at 1s. 6d.; 15 acres of wood at 4d.; 15 acres of fresh land (that is, land not lately ploughed) at 6d.; a windmill at 13s. 4d.; profits at court, half a mark; quit rents, 6l. 19s. 6d.; copyhold rents, 1l. 6s. 8d.; 806 days' work at ½d. a day; 606 days' work in harvest at 1d. a day; tallage (tax) of homestead at the will of the lord, never more than 6d.

The principal estate in the parish is that of Wrotham Hall, lying between Bentley Heath and Kit's End. The



BRASS OF WILLIAM KESTEVEN (?), NORTH MIMMS.

mansion was built in 1754 by Isaac Ware for the ill-fated Admiral Byng, who was shot at Portsmouth in 1757 for his failure at Minorca. The name was taken from Wrotham, in Kent, where the Byngs had previously resided. The estate passed in 1847 to the first Earl of Strafford, and remains in that family.

The moat at Old Ford, on the edge of Hadley Green, marks the site of the original house of the Frowickes, or Frowyks, who afterwards dwelt at Dyrhams Park, which in

the middle of the eighteenth century belonged to the Earl of Albemarle. For over a century it has been owned by the Trotter family. The entrance-gate at Bridge Foot is said to have been originally put up in London by General Monk when Charles II. made his public entry into the City on his restoration. The Marquis of Salisbury is lord of the manor.

The Church of St. Giles, a building of flint and red brick in the Perpendicular style, consists of chancel, nave of four bays, north aisle, and a tall and massive embattled wooden tower, with angle turret containing a clock and six bells. The church was for the most part erected about 1350, restored in 1868 by the late G. E. Street, Esq. The north aisle, built in 1526, is of brick; and some interesting fragments of pre-Reformation glass remain in the windows. The rood-loft staircase remains in the south wall, and the chancel retains an Early English piscina; here also, on the north side, is a canopied altar-tomb in the Renaissance style, elaborately wrought, and bearing the initials "R. H.," though Mr. John B. Firth, in his "Guide to Middlesex," says this is nameless and dateless. Another and similar tomb, of Caen stone, also canopied, bears the recumbent effigy of a knight in armour; there is no inscription, but it is supposed to be the last of the Frowickes, who died without issue in the middle of the sixteenth century; this is in the Frowicke Chapel, separated from the chancel and north aisle by a late wooden screen. There are brasses with effigies to Thomas Frowyk, who died in 1448, Elizabeth his widow, and nineteen children, with an inscription in Latin verse; and others with inscriptions and shields of arms to Henry Frowyk and to Roger Hodsden, 1606, Joan his wife, and ten children. The Frowicke Chapel was restored in 1898. The font is Early English. The stained east window is a memorial to the Rev. P. Hammond, twenty years vicar of the parish. The "Calvary," erected in the churchyard in 1908, was carved at Oberammergau.

The register dates from the year 1558.

In 1603 there were thirty-two burials; in 1624, fifty-two; and in 1625, fifty-four. In 1665 the names of seven persons only are entered. Of those who died of the plague there is no mention, excepting in the following extraordinary note; "besides above 100 more who died of the plague the same year" (Lysons' "Environs of London, 1800").

There are five almshouses for women, built by John Howick Howkins and others, and partly endowed with 350l. yearly, derived from Wrotham Park and other sources; each inmate receives 15l. and a ton of coal yearly; the charity is managed by the Vicar and churchwardens. The Brewers' Almshouses, founded in 1686 by Alderman James Hickson, afford room for six widows, each with an allowance of 7s. per week and two tons of coal yearly, besides an additional 5s. per week from J. Pooley, Esq.; the Brewers' Company also gives in addition, underclothing and material for gowns. The old almshouses were at Kit's End; the present were erected in 1857.

I must briefly call your attention to this house in which we are now, viz. the White Hart Hotel. This house, I am informed, is close on three hundred years old; the ceilings in the upper rooms are very beautiful, and to one room there is a bar on the inside of the door, which can be fastened; and I would also ask you to note the little cupboards over the fireplace, &c., denoting, I think, that it must have been the residence of a private family.

MANCHESTER SOCIETY OF ARCHITECTS.

At a meeting of the Manchester Society of Architects on Wednesday last (the 11th inst.), Mr. Albert H. Hodge read a paper on "Architectural Sculpture" before a large attendance of members.

It was a great mistake, Mr. Hodge said, to think of architectural sculpture as a form of decoration applied only to buildings, and as secondary to the bust and the portrait statue. Each has its place in the world of utilitarian art, and must be subservient to the principles of architecture, and must have truthful construction, balance, scale of parts. Sculpture, when part of an architectural motive, should be so closely allied to its setting that to strip one piece of it is to rob the composition of a necessary "factor of scale." How were we to bring about this oneness of mind and motive? When he studied the problem, he felt that the greatest quality of a piece of sculpture was scale. It was better to err on the small side when fixing the size of figures than to make them too large. In the former case the figure only suffers, whereas in the latter the whole building is dwarfed.

The placing of sculpture on our buildings ought to be

considered when the façade is conceived in the mind, and should not have the appearance of being added. The Parthenon pediment was not an after-thought, nor the friezes an extra. To obtain a monumental feeling we should have to look up slightly to the sculpture. When used low down it should be severe or Egyptian in character.

Mr. Hodge analysed the sculptures of the Parthenon pediment, and showed how the expression was graduated from Helios rising from the sea at one side of the pediment to the birth of Athena in the centre, the action of the figures increasing as the central group was approached and decreasing towards the quiet Selene on the other side. He instanced many other Greek sculptures designed on architectural principles, a portion of the Panathenaic frieze being planned with the wave ornament as its motive, and another part with square outlines on the basis of the fret ornament. The whole motive becomes slower and steadier as it approaches the main entrance where the assembled gods are seated. We ought to realise the limitations of sculpture and architecture, and not make our sculpture represent life models. It should look as if it were cut out of stone, not built up of small pieces. Egyptian work owes its austerity to this quality. Modern French work looks as if it were clay modelling. Straightness of drawing and tonality of surface are always found in the work of a master; rough lumps of stone left to make the adjoining parts look refined are tricks unworthy of sculpture. Style in our work is simply the outcome of true form.

He wished to point out the great loss to architecture by an estrangement from sculpture. He appealed to architects to draw closer the bond. Architecture realised its highest flights when it used sculpture in the proper way. Without sculpture it might be fine, with sculpture it is supreme.

THE ARCHITECTURAL ASSOCIATION.

DISCUSSION on Mr. Statham's paper on "Architecture Considered as Plan and Section."

Mr. MAURICE B. ADAMS in opening the discussion, and proposing the vote of thanks, said he was afraid he had not very much to add to what Mr. Statham had so admirably and tersely put before the meeting. He was glad that so high and monumental a view of things had been taken. The present day seemed to be degenerating very considerably. This tendency had struck him recently on looking at the work of the Royal Academy students. It appeared as if they had not quite the same high ideals as their predecessors used to have, and which were indicated in the conception of Mr. Street for his Law Courts, and that of Mr. Burges for the same building. Two very fine drawings were made by Mr. Axel Haig of the latter architect's design. These had been apparently lost sight of, and unless an effort is made to recover them they may be lost. The present generation were floundering about and not keeping to the high ideals evident in most of the great buildings of the past. He was wondering whether the style of drawing had anything to do with it. The present-day drawing seemed to him to be getting exceedingly theatrical, and set out in a variety of colour and rococo ornamentation. That the plans are ingenious every one must admit; and that was a point on which Mr. Statham had done so well to lay emphasis upon, but it was the section that had to be kept in mind when planning a building. In the more important recent architectural competitions the successful designs came from men who realised such details as what a mezzanine floor was, and how the subordinate parts can be arranged without destroying the main scheme. This truth had been borne in upon him by a competition for a library at Hammersmith, in which he had entered. He had realised in his design only fairly well the idea that Mr. H. T. Hare carried out extremely well in his winning design, and he had to acknowledge that he had been thoroughly well beaten by Mr. Hare in the arrangement of the storage room. Mr. Norman Shaw's houses at Kensington show a section, which is extremely ingenious, and he has managed to make his staircases and the subordinate parts fall into their places in the most ingenious way. Mr. Heseltine's house is an instance of the masterly way in which the staircase is placed. The sort of lecture which had just been delivered embodied much that was useful. Of late, however, there had been many delightful papers of another sort in which a great deal of steam was easily got up. With very much of what Mr. Statham had said concerning the Houses of Parliament, he heartily sympathised. The magnificent lay-out and general contour of the building would outlive the battle which went on as to whether Pugin or Barry ought to have the credit.

Pugin most probably deserved a considerable share; but the conception of the whole was Barry's, whose other work shows the same masterful character. Pugin, however, in many of his churches, was quite alive to the necessity of a dignified plan. It was, said Mr. Adams in conclusion, a great pleasure to propose a vote of thanks to Mr. Statham, who was one of the oldest friends of the Architectural Association, and who contributed in the past papers of a practical kind.

Mr. GERALD C. HORSLEY said he had enjoyed immensely seeing the plans exhibited on the lantern screen, many of which were old friends. It was impossible to help wondering whether students, and those who were a little older than students, might not with advantage study plans more than they did at present. He remembered the time when on sketching excursions most of those taking part made a plan of almost every building visited. He himself followed that example, and found that it tended towards collecting a representative number of plans very interesting to look at afterwards, and which were an undoubted help. Such plans were not elaborate, but just sketch plans jotted down in a sketch-book while visiting the building. There was a point or two in the moral at the end of the paper on which he would like to touch. Mr. Statham had said: "I am proposing to deliver you from all this (question of 'What style shall it be in?'), once for all, by recommending you to adopt a view of architecture in which detail, in a sense, does not matter." That was quite a right proposition when one was considering a full series of plans and sections; but it must not be forgotten that plans and sections were architecture in its elements. Probably Mr. Statham meant also that in the plan and section of a building one got its real spirit, and the whole conception. That was quite correct. But Mr. Statham went on: "What I want to suggest is not, of course, that good detail is of no consequence, but that, provided it is good of its kind, it really does not matter so much what kind you adopt so long as the main conception of the building is a fine and effective one." With that view it was impossible to agree. When one is making a design, the first endeavour is to get a good plan, and then to pass on to making the drawings of the elevations and sections. The work is comparatively easy so long as the drawings, elevations, and sections are to a small scale. The difficulty of architecture nowadays begins when one comes to the details. Certainly not everything depends upon the detail. Mr. Statham's own remarks, however, on the Pantheon, showed how very important the detail is in the design of a building. He also said that the plan of the Houses of Parliament could have been expressed equally well in terms of Renaissance as in the Gothic which we know. Surely the reason for this is that the plan is a Renaissance plan, designed by Sir Charles Barry, who was trained as a Renaissance man! But no one would be pleased and satisfied if the exterior was rendered different to what it is. The Victoria Tower was a thing they would not and could not give up. Nor would they have been satisfied if the exterior of St. Paul's had been designed by another hand, or if the detail had been done by someone else than Wren.

Mr. W. J. H. LEVERTON expressed pleasure at hearing the defence as to Barry being the architect of the Houses of Parliament. Mr. Statham had shown successfully some time ago that such a plan could not have come from Pugin. With regard to Mr. Maurice B. Adams' reference to the desirability of tracing and securing for the Association the design prepared by Burges for the Law Courts, he would like to mention that the designs submitted in that competition were for many years in the hands of the South Kensington authorities. Some time ago it was proposed to destroy them. When this became known some men from the Office of Works rescued all that could be found of them, including the one by Burges.

Mr. ARTHUR KEEN, after alluding to a house by Mr. Norman Shaw in Cadogan Square as being the one he particularly admired, said he had for some time been trying to get hold, as a specimen of draughtsmanship, of something that Burges did. That architect's scheme for the decoration of St. Paul's was shown at the Association's conversation last year. As to Mr. Statham's paper, Mr. Keen said he felt some regret that he had not made it "Architecture considered as Plan, Section and Lighting," for the lighting appeared to him almost as equally an important matter as the other two. He would suggest therefore that as the paper just read had dealt chiefly with plan, Mr. Statham should at some future time give them another paper treating of Section and Lighting. Not much was heard about the bearing of construction on planning, though obviously it was important. The plan prepared by Bernini for the Louvre was

extremely interesting. His treatment of the courtyard angles might be often seen in English manor houses, where the corner is admirably filled up with a secondary projection. Longleat illustrates this characteristic. Mr. Statham's plan for dealing with the sites for the proposed Government offices was very interesting, especially as to how far the blocks of buildings as actually carried out exceed in the amount of solid the amount shown in Mr. Statham's proposal. It would seem as if some such scheme could be executed without much sacrifice of land. This would indicate how far a layout that was successful from the artistic point of view could be successful also from the economic. The paper had shown how very much everything depended upon good planning. This was also seen in the recent big competitions, in which the plan has evidently been at the back of the assessor's mind. He had, in conclusion, great pleasure in putting to the meeting the vote of thanks for the very able and capable paper.

The vote of thanks having been carried with acclamation, Mr. H. H. STATHAM replied to some of the points raised. He expressed agreement with the admiration of Mr. Norman Shaw's plans, many of which were remarkable for the degree of fancy in the way they are disposed. Pugin was a great sectional designer. In his church work he had a way of carrying his nave arcades to a considerable height, and adding a low clerestory in such a way that although from the exterior the churches seemed small, from the inside they appeared large. The greatness of the Pantheon did not depend upon its detail, for it was a great building in spite of the fact that its Order was too large. As to St. Paul's, he questioned whether much of the minor detail had been designed by Wren. It was quite possibly worked out by the carver from the architect's scribbled notes. Moreover he did not admire much of the exterior detail with the exception of the two western towers. As to the Law Courts designs he thought that every one of them should be preserved. Burges' design in particular was a wonderful conception, though not perhaps suited to London.

The PRESIDENT announced that the next meeting will be held on January 23 and will be combined with the Camera Sketch and Debate Club. A paper by Mr. Theodore Fyfe entitled "The Atelier versus the Builder's Yard" will be followed by a debate.

YORK AND YORKSHIRE ARCHITECTURAL SOCIETY.

IN a paper read before the above Society on January 11, Mr. J. Stuart Syme said Egyptian art, as might be expected from the remote position it occupied in history, was very closely dependent for its characteristics on those of the race which practised it, and on the conditions under which it lived, and no study of the one is complete without the other.

Apart from articles of domestic use, toilet appliances and the like, there is little left to us which was not connected in some way with the religious life of the people, and with their profound belief in the immortality of the soul. Had it not been for this belief we can hardly suppose that they would have been at such pains to construct and adorn with a wealth of sculpture and painted decoration the various tombs and monuments from which chiefly we obtain our knowledge of their life and art.

So far as can be judged from contemporary records, the tools employed for carving in wood or stone and the method of using them did not differ greatly from those in use at the present day. In addition to various chisels and mallets they used the bow-drill the saw and the gouge. They were very partial to the use of the adze in wood-working. The tools were of bronze and iron, and there is no evidence that they had any knowledge of steel, or had any method of tempering to an unusual degree of hardness. Wooden statues, if of great size, were framed up owing to lack of large timber. The Egyptian artists were very skilful in line drawing which was really the basis both of their decorative painting and their bas-reliefs. They had regular methods of study for beginners, arranged progressively from simple objects to finished heads, capitals, &c. The models consisted of small plaques and cubes showing the object in various stages of execution. Bas-relief proper was not so much employed for surface decoration as simple incised work, or what has been called "relieved intaglio," in which the object was outlined with deeply incised line and swelled out gradually from the bottom of the recess thus formed, and slightly modelled. The bas-reliefs were almost invariably painted, the colours being used fairly pure and on conventional rather than naturalistic lines. Statues in sandstone, limestone, or wood,

were also painted, but those in granite or other hard stone were more highly finished off and brought to a fine polish. Egyptian art did not undergo any marked development once the characteristics of the style had been fairly established, and the differences were rather in degree than in kind, except as regards minor details of costume, technique, &c.; the most vigorous work originated early during the ancient Empire, and some of the best examples date from about the fifth dynasty. From that time onward the tide of excellence ebbed and flowed, through the Middle Empire, till in the New Empire after the overthrow of the "shepherd kings," issued a Renaissance during which the quality of the work produced probably excelled that of any other period. All Egyptian art both in painting and sculpture is extremely conventional, and many of their mannerisms and methods may appear crude and unjustifiable, but they were probably dictated by considerations which under the circumstances were fit and proper. Their decorations were in fact not mere ornament, but rather histories and tales written for a purpose in a lazy age, the terms of which were clearly defined and would be understood of all, and with an aim which is worthy to rank high among the best the world has seen.

Mr. Bellamy proposed a vote of thanks, which was seconded by Mr. R. R. T. Smith, and the lecturer briefly responded.

THE SOCIETY OF ARCHITECTS.

A NEW departure, so far as the Society is concerned, was made last Thursday evening, when only formal business was taken at the ordinary meeting at 28 Bedford Square, and the remainder of the time devoted to social intercourse and music.

The object of the gathering was to give members and students an opportunity of meeting together on a more friendly and informal footing than is possible under the usual circumstances, and that the Council's experiment was fully justified was shown by the way in which the members and their friends took advantage of the invitation.

The President, Mr. Geo. E. Bond, in his genial way contrived to combine in his brief address (directed more particularly to the students) both instruction and humour, and his remarks were received with every indication of appreciation.

Round the walls of the reception-rooms and other parts of the building were exhibited measured drawings, sketches, water-colours, and photographs, the work of Col. F. S. Leslie, R.E. (Hon. Secretary), Mr. B. R. Tucker, Mr. F. M. Cashmore, Mr. Frank Hearne, Mr. H. Y. Margery, Mr. S. R. Smith, Mr. A. B. Dury, Mr. A. F. Davies, Mr. F. R. Catling, Mr. J. T. Westbye, Mr. E. J. Williams, Mr. J. D. Stewart, and Mr. H. Phayre.

Light refreshments were provided and smoking was permitted.

A feature of the evening was the very excellent programme of music arranged by Mr. R. Willock, F.R.I.B.A., to which the following artistes contributed:—Miss Hilda Campbell, Miss Dorothy Eales, Mr. Harry Jackson, and Mr. Craig, whose efforts, mostly in lighter vein, as became the occasion, were rewarded by hearty applause and encores.

During the evening the Chairman extended a welcome to the visitors, and Mr. Max Clarke, F.R.I.B.A., in responding, referred with satisfaction to the arrangements made for the deliberations of representatives of the R.I.B.A. and the Society on registration, which he hoped would result in great benefit to the profession.

It is anticipated that the success of this meeting will cause a demand for others of a similar kind, and it is hoped that at fixed intervals further opportunities may be afforded to members and their friends of meeting together under similar circumstances.

It is desired that in future the musical talents of members of the Society may be enlisted to add to the harmony of the gatherings, and the Secretary will be glad to receive the names of any who are disposed to assist in this way.

MESSRS. KAYE, PARRY & ROSS, architects, Dublin, have been placed first in the competition promoted by the Bangor Urban District Council (Ireland) for plans for the proposed hot sea-water baths at Pickie. Sixteen sets of designs were adjudicated upon by Mr. Frederick Batchelor, A.R.H.A., the assessor. The Urban Council have accepted scheme (a), which is estimated to cost 6,903/.

MR. E. SEWARD v. THE CARDIFF CITY COUNCIL.

MR. MUIR MACKENZIE, one of the High Court Official Referees, resumed on January 11 the hearing of the action brought by Mr. Edwin Seward, F.R.I.B.A., and a member of the Royal Cambrian Academy, for the recovery of fees and damages from the Corporation of Cardiff in connection with the plans, &c., he had prepared as architect in connection with the Welsh National Museum scheme at Cardiff. The evidence has already been reported in *The Architect*, and on the resumption of the proceedings after the Christmas Vacation counsel on both sides summed up the case at considerable length. On behalf of Mr. Seward, Mr. E. Pollock, K.C., in his arguments commented strongly on the Corporation not having called Mr. Wheatley, the Town Clerk, to support certain imputations which Mr. Pollock characterised as unworthy of a Corporation. Mr. Wheatley might have been able to throw light on the matter if there had been any improper action on the part of Mr. Seward as regarded the specifications.

At the conclusion of Mr. Pollock's arguments on January 12

The Official Referee reserved judgment, remarking that he would endeavour to give it as soon as possible.

ILLUSTRATIONS.

NATIONAL MUSEUM OF WALES, CARDIFF.

WE publish to-day Messrs. LOVEGROVE & PAPWORTH'S design for the above competition. The plans show the general arrangement of the galleries for the various departments, which are grouped round a central hall, the appearance of which is further enhanced by the large top-lighted galleries of the Welsh Natural History Department and the History and Antiquities Departments, which adjoined it and added to its apparent size. The main entrance was on the western front, with the ladies' and gentlemen's cloak rooms, the refreshment room and the children's museum on either side of the entrance hall; and opposite, on the eastern front, the lecture theatre, curator's offices, board room and library were grouped. The reserve collections attached to each department were planned immediately adjoining the department to which they belong, and consisted of a floor with a mezzanine over, the two together making up the height of the one storey main department. The perspective shows the general scheme of the design from the elevational standpoint. The original sketch was exhibited at the Royal Academy Exhibition, 1910.

PROPOSED HOUSE AT CHESHAM.

THE walls are intended to be in 2-inch multi-colour Buckinghamshire bricks with wide mortar joints—occasional patterns to be formed (above the head of the ground-floor windows) with dark headers. The quoins and hood of doors to be in Corsham Down Bath stone. The roofs are to be covered with hand-made brindled tiles brown in colour. The cornice is of wood painted white. The window sashes and frames are also to be painted white, but the external sun-shutters to be painted green. The drawing of this house was illustrated in the Royal Academy in 1909. The architect is Mr. STEPHEN J. B. STANTON.

TRAVELLING STUDENT'S SKETCHES.

WE give reproductions of two more of Mr. WALSH'S drawings, made during his tour as our Travelling Student last year.

MR. JAMES CHALMERS, architect, Glasgow, has prepared plans on behalf of a Glasgow syndicate for the provision of a "Garden City" at Barassie, near Troon, on the Ayrshire seaboard. The site belongs to the Duke of Portland and extends to nearly sixty acres. It is proposed to erect about 180 bungalows of medium size, which would be tenanted principally by golfers. Provision is also made for a concert pavilion, an hotel, a boarding house, a bowling green, and a tennis court. The total cost of the project is expected to be about 160,000/.

THE ILLUMINATION OF INTERIORS.

By Professor J. T. MORRIS, M.I.E.E.

PART I.

DAYLIGHT ILLUMINATION.

(Continued from last week.)

ILLUMINATION PHOTOMETER AND ITS DAYLIGHT ATTACHMENT.

TO return to the experiments previously described on indoor and outdoor illumination. The instrument used was one devised by Mr. A. P. TROTTER, made by Messrs. EVERETT, EDGCUMBE & Co., Ltd. Fig. 5 illustrates the

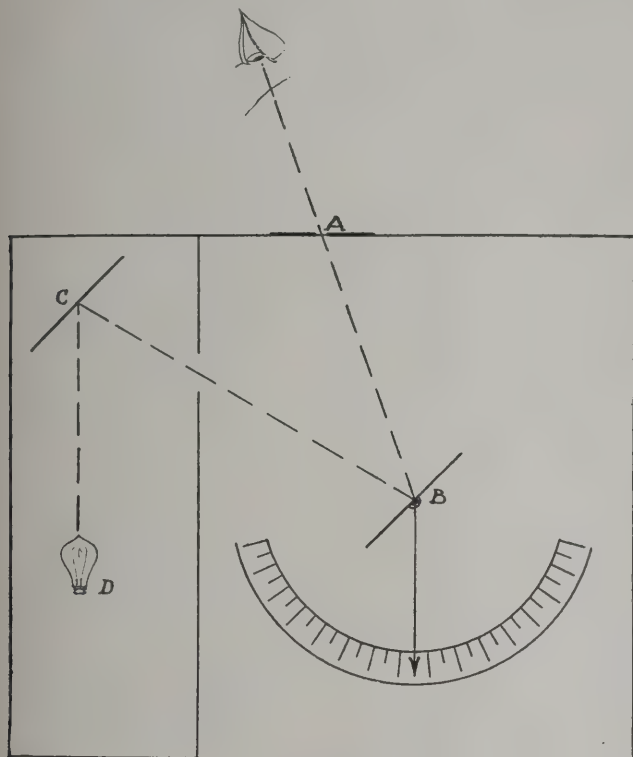


FIG. 5.

general arrangement. The apparatus consists of a wooden box, on the top of which is a white matt screen A. In this screen is a slot about $\frac{1}{8}$ inch wide, through which the experimenter can see the tilting screen B inside the

the screen B appears of the same brightness as A. Attached to B is a pointer moving over a graduated scale. When the position of equal illumination has been found the pointer reads on the scale direct in foot-candles the illumination of the surface A. The standard lamp is supplied by a 4-volt accumulator, and precautions are taken to insure its accuracy. For taking measurements out of doors during daylight hours a special hood (fig. 6) is placed over the instrument. This reduces the illumination to any extent desired by means of diaphragms of known aperture fixed in a tube at a distance of ten inches from the screen A.

In using the Trotter universal photometer for the measurement of external or daylight illumination the question arises, What is the ratio between the intensity of light falling on the instrument screen when the above-mentioned hood is in position and when it is removed? Imagine a hemisphere circumscribed about the slot in the screen as centre and with the height of the hood as radius, then it is evident that if the intensity of light were the same for all parts of the sky the relation would hold:—

$$\frac{\text{Intensity of light measured}}{\text{Total flux of light from hemisphere}} = \frac{\text{Area of diaphragm}}{\text{Area of hemisphere.}}$$

But as all parts of the sky are not equally effective in contributing towards the illumination of a horizontal surface, the above ratio will not give a true measure of the proportion of illumination which will fall on a horizontal surface when the hood and diaphragm are in position to that which will fall on the same surface when the hood is removed. Not only does the angle at which the light strikes the surface affect the question, but also the actual illumination received from each part of the sky from the zenith to the horizon on a surface turned so as to face directly the part to be tested, is different. Those parts nearer to the horizon contribute less than those parts which are nearer to the zenith.

With the object of determining the magnitude of these effects the author has conducted a series of experiments. The size of the diaphragm used was such that the ratio of its area to the area of the hemisphere was 0.003. Measurements were made during the evening in the failing light from the roof of the East London College alternately with and without the hood. The true reducing factor of the diaphragm came out as follows:—

Test.	Ratio.	Test.	Ratio.
1	0.016	3	0.013
2	0.018	4	0.017

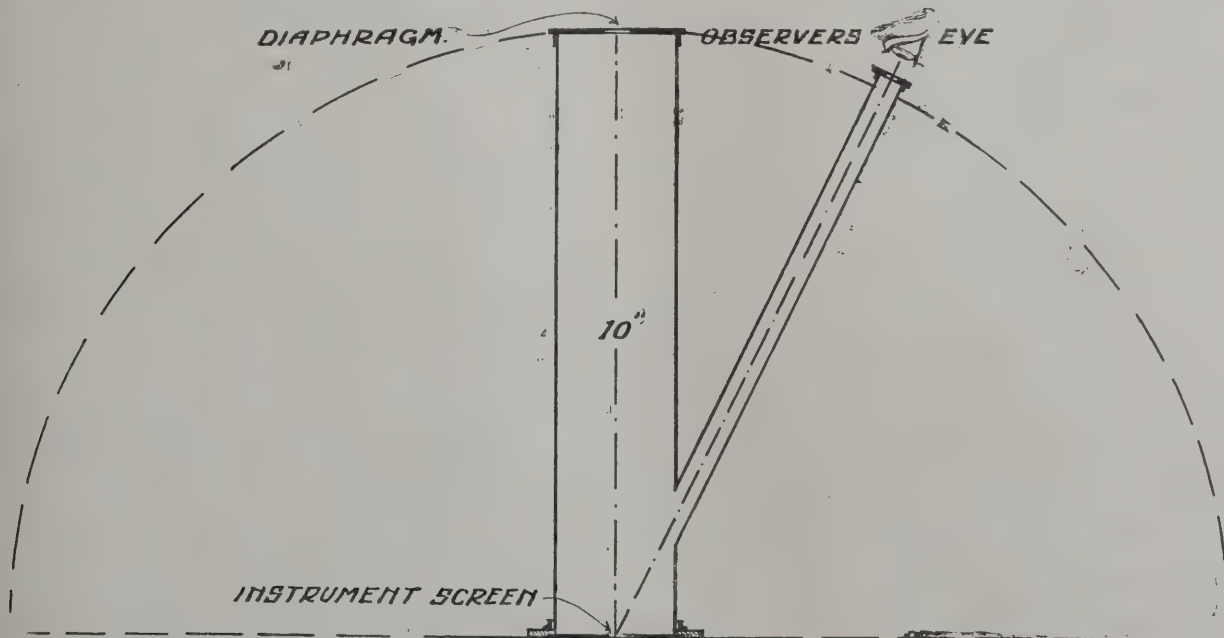


FIG. 6.

box. This screen has also a matt white surface. Contained in a separate compartment is a small working standard lamp D, which, by means of a fixed mirror at C illuminates the adjustable screen B. In one position

The mean of these readings is about 0.015—i.e., five times as great as the ratio of the diaphragm area to that of the circumscribing hemisphere. The exact ratio probably varies considerably according to the state of

the day (cloudy or otherwise), and the author believes that the inventor of the instrument suggests taking the ratio of the diaphragm to hemisphere as an arbitrary but constant quantity for ordinary purposes. The author ventures to differ from this, as it appears to be rather misleading, and suggests the ratio 0.015 (instead of 0.003) as, although only approximate, a much more representative value than that given by the makers. This value was used by the author in the calculations given above. As a further check the author has tried balancing the light of an electric arc against daylight with a Bunsen photometer, and has obtained values bearing out the measurements made with the Trotter instrument when using a ratio five times as great as that given by the makers.

A number of experiments were made to ascertain the distribution of light over the sky, and the following results (Table VI.) were obtained, giving the ratio of the intensity of light in an inclined direction to that in a vertical direction. These measurements were made about one o'clock on a rather grey day in June from the roof of the East London College, and the quarter of the heaven in which the sun was was readily discernible.

TABLE VI.

Angle of Inclination from Vertical.	Direction of Inclination.			
	N.E.	N.W.	S.E.	S.W.
0°	1.00	1.00	1.00	1.00
30°	0.64	0.70	1.07	1.24
45°	0.71	0.79	0.68	0.97
60°	0.57	0.98	0.49	0.86
80°	0.175	0.175	0.18	0.16

It will be observed that the vertical intensity has been taken as unity, other figures being, of course, relative. It is interesting to note from the above figures what a small proportion of effective illumination in London, at least, comes from those parts of the sky near the horizon.

(To be continued.)

THE PAINT AND VARNISH SOCIETY. STANDARDS OF COLOURS.

A DEBATE on "The Possibility of Introducing a British Standard Colour Card for Paints and Distempers," was held at St. Bride's Institute, Ludgate Circus, E.C., on Thursday, January 12, when Mr. Arthur Seymour Jennings opened the debate as follows:—

It must be regarded as a somewhat remarkable fact that in the English language—or in any other for the matter of that—we have no exact names for colours notwithstanding the earnest efforts that have been made by scientific men for many years to that end. It must be clearly understood that I am speaking now of the appearance of colours quite regardless of their pigmentary composition. The spectrum colours are more or less named by various well-known authors on "colour," such as Chevreul, Benson, Rood, and others; but so far as paint is concerned the nomenclature is chaos. If I order a quantity of, say, canary yellow or peacock blue from a dozen different paint manufacturers, I shall be almost certain to receive colours no two of which are exactly alike in hue. Again, if I ask half a dozen practical decorators to mix me a Venetian green the results will probably differ very widely. The explanation, of course, is that ideas differ as to the colours named; and while one man thinks that canary yellow should have a slight greenish tone, another may incline rather towards a more yellowish tint. And I stop here for a moment to explain that I am using the words "tone" and "hue" as synonyms, and as indicating the particular cast of a colour, as for instance, one might speak of a particular red having a yellowish hue or tone. The word "shade" I am using to indicate any colour which has been lowered or saddened by the addition of black, and by "tint" I mean a colour which has been lightened by the addition of white.

We shall all agree, I think, that the names of colours as at present used mean practically nothing at all, because they convey no definite meaning. Perhaps an exception to this is in artists' colours, where the names in common use approach fairly closely to being identical with certain notable exceptions. We shall, I think, also agree that the very great variety of names given to the same colour, or vice versa the different hues, shades, or tints which are pro-

duced under the same name, is in commerce exceedingly inconvenient. For example, a paint manufacturer may frequently have to specially mix, perhaps, a small batch of colour, a considerable trouble to himself, to meet a particular order, while if colours of paints could be standardised, they could be supplied from stock. To architects the want also proves most inconvenient, and results in their usually specifying in some particular piece of decoration that it shall be finished in "approved tints." This means that the decorator has to spend, perhaps, hours in mixing various samples for approval, while if there was a standard the architect could select the colours which met with his approval and specify it by name or number without any further trouble. Again, a standard of colours shown by sample could be submitted to clients, and they could select the one which they liked best, and the trouble would be at an end. One might enlarge for a considerable time upon this aspect of the subject—the inconvenience of the present want of system and the great utility of standardising.

Now I may presently be told that no system of exact nomenclature can be formulated because there exists so many colours. This is obviously true when we consider that actually there is no limit to the number of colours at all. Mr. Joseph W. Lovibond estimates that there exist sixty million colour sensations, but when we consider that the spectrum is a graduation passing from one colour to the other, and this spectrum might be extended to any length, and when we consider also that any one of these colours might be mixed with any one or more of the others, we shall see that the word "infinite" is the only one to apply in this connection. But because there is this vast quantity of colours, there is no reason why we should not endeavour to name a few of those which are in common use. If we cannot do everything to the end in view we can, at least, do something.

Time will not permit me to even mention the various plans that have been recommended to solve this problem, but I think I am right in asserting that all of them are based upon those colours which occur in the solar spectrum. Prango, of Boston, for instance, endeavoured to systematise the subject in the following manner:—On the sheet at the top is a spectrum of a pure colour divided up into squares, and beneath these similar squares with similar colours to which had been added white. There are several rows with more white added until the bottom is reached, and the tints are, of course, very light ones. The second sheet is exactly the same as the first, but a small portion of black has been added to all the colours and tints; the third sheet is the same thing again with more black added; the fourth sheet more black still, and so on to the end of the work. The colours are distinguished by lines, and the lines indicate the amount of white added by numbers, so that a letter and number give any of the combinations. For practical purposes this scheme is useless, because the majority of the paints on the market do not accord in hue with hardly any of the colours given. This is a very important point to which I desire to direct your attention. Certainly a majority of the ordinary paints sold on the market are not spectrum colours at all, that is to say, they are not pure colours, but are mixtures of complex colours. I have carefully gone through the paint colour cards kindly supplied to me by paint manufacturers and others, and I find that amongst the paints there are perhaps about 5 per cent. of pure colours. In the figure of the spectrum before you, kindly prepared for me by Mr. Oliver, you will not find such colours as a Brunswick green, an amber, an ochre, or a hundred and one other colours I could name. Now it does seem to me obvious, that, however fascinating and scientific the theory of the subject may be, yet what we have to do is to deal with those pigment colours which are in common use, because those which are ordered frequently are the very ones we wish to standardise. I am aware, of course, that many manufacturers have specific names for their colours, in some cases registered, and I hope later to show how this difficulty may be overcome.

The Paint and Varnish Society has happily made great progress during recent years, and it now includes within its membership many colour experts who will, I trust, kindly criticise the proposition I am about to make. We all recognise, as I have said, the absolute need of some convenient colour nomenclature; we are, I take it, by no means decided as to what that form should take.

The suggestion I shall make, if not theoretical or scientific, is, at least, a practical one, and one which would grow in importance as time goes on. Briefly, the suggestion is this: That we invite the co-operation of a few prominent members of the Royal Institute of British Architects, of the

London Decorators' Association, and of paint and colour manufacturers to form a committee of selection. They would decide by examining the various cards of different makers, such as those before you, what names should be given to a certain number, say three, four, or five hundred to commence with, and then would agree as to what name should be given to each. A selection of colours having been thus made and named, I suggest that this Paint and Varnish Society should issue samples of each colour in oil paint and distemper, and that these samples should be issued in book form to be published at as moderate a price as possible, so as to bring it in the hands of decorators, architects, and paint users generally. The book might be termed "The British Standard of Colours for Paints and Distempers," and its sale ought to bring some considerable profit to this society and enable it to extend the good work it is doing.

This debate is termed "The possibility of introducing a British standard." I suggest that it is possible to introduce such a standard by adopting the method I have stated. I will not take up your time by entering into details, because these would be naturally settled by the committee, but I think that, at least, three tints of each colour should be named, and these could perhaps be arranged in the form of a hexagonal prism on the system adopted by a well-known German firm of dye manufacturers. The naming being done, the tints could be numbered 1, 2, 3, and 4 without difficulty.

In proposing this scheme I quite appreciate the fact that it would take some years before the classification would be universally accepted; but then I remember that the progress of this society, to which I have already alluded, is very likely indeed to continue, and if we, as a society, backed up with the National Association of Master Painters, the Royal Institute of British Architects and others, say that such a hue, tint, or shade is to be called by a certain name, I think that after a reasonable time we might expect that that name would come into general use.

What is likely to happen? Suppose the work is completed and the book is issued as I have suggested, and that it is purchased by a number of decorators, among others, they would show it to an architect or client who would make a selection for the particular colour he wanted. The order would then be given for so much paint of that particular colour, giving name and mentioning the British standard; the paint manufacturer would turn to the book and see whether he had already the exact hue required, if not, he would, of course, have to match it in the same way as is done every day. It seems to me it is absolutely certain that when the book came into general use, and paint manufacturers frequently received orders which referred to colours contained in it, they would lay in a stock of all of them, because it would save them expense in mixing small batches.

It may be urged that many painters mix their own colours and do not order them ready made, but this would not affect the matter, because if an architect or house owner selected a certain colour from the book the painter could either order it ready mixed or mix it himself, as he might desire. In the latter case he would have a sample before him upon which to work.

I anticipate that someone may raise the objection that very few colours are really permanent, so that in course of time those originally selected might change to some extent. Being in a book, however, which would the greater part of the time be closed, the colours would be protected from light, and thus rendered, at least, fairly permanent. But I suggest that samples of the standardised colours should be locked up in a place to which light is not admitted, perhaps in an hermetically sealed case, and secondly, that at the start a reading be made by the Lovibond Tintometer, so that when future specimens are to be prepared the precise colour might be re-obtained. Mr. Lovibond, who is present, and who has done such grand work in the direction of colour measurement, will be able to tell us later how far this part of my suggestion can be carried into effect.

There would, I take it, be included in the book a fair number of what I may term "Art shades," for want of a better term. In dealing with these it would probably be necessary to issue from time to time additional pages containing such colours. I realise the difficulty in dealing with those colours, the names of which are registered, and are therefore proprietary articles; but I do not think the difficulty is one that cannot be overcome. If a firm brings out a colour which they call by a special name there is, as far as I know, nothing to prevent another firm matching that colour, and selling it under another name; that is to say, it is not possible to patent a "hue," "tint," and "shade" of any colour, this being common property. As a matter

of fact we all know that this sort of thing constantly goes on. A firm brings out a special colour for some particular work, and this grows in favour until another firm brings out a similar one, and so on. In such a case the colour would be eventually included in a supplement.

I know, of course, that a large number of arguments will be advanced to what I have brought forward. I cannot anticipate them all, but I can suppose that someone will object to my plan that, because colour varies so largely with the particular light in which it is viewed, the scheme is impracticable. We all know that all colour has a different appearance when viewed in a strong light than it has, say, on a foggy day, or in a comparatively dark room. We might even go farther and say that it is highly probable that the eyes of even twenty men who are quite free from colour blindness receive precisely the same sensation of colour, but this really hardly affects the question. What they see and what they select is what they want. The impression a colour in the book makes on an architect's eyes would be the colour he wants to use. I see no reason why in standardising we may not suppose that the colour is viewed in an ordinary strong daylight. Mr. Charles Harrison has kindly offered to assist me in showing colours which are annihilated by burning sodium. He will also show by means of the lantern the effect of throwing one colour over another.

With regard to the influence which one colour has over the appearance of another in juxtaposition, this can be overcome by providing a grey mask of paper so as to isolate any particular colour. The mask might be of grey paper, using a light grey for the light colours and a dark grey for the dark colours.

I acknowledge very fully and freely that a great deal of what I have suggested has already been carried out by a well-known paint manufacturing firm. I wish that I could mention their name, and should certainly do so but for the unwritten law which exists in this society that firm names are not to be mentioned. However, I do not suppose there is a gentleman in the room who does not know the house to which I refer. Their specimens are before you among others. Their plan doubtless succeeded very well indeed, as far as they are concerned, but there is a great difference between work of this kind being accomplished by a single firm, obviously and quite properly for their own purpose, and a society like this doing so for the benefit of architects, decorators, paint manufacturers, and all other interests involved. In the one case rival firms are hardly likely to take up the standard of their competitors; on the other hand, they are very likely to do so because it will be most convenient, and pay them best.

The idea has already been carried out on a very much larger scale than I have proposed by the French Society of Chrysanthemumists, and I have here two books issued by this society which contain no less than 365 colours with four tints of each. All of these are classified on the system of Chevreul, a classification, or rather an arrangement, which we might follow in our book. These plates, I feel sure, will be of great service in accurately naming the colours of flowers and fruit. They do not, however, serve our purpose exactly, because they mostly follow the colours of the spectrum, and because they are printed in ink. What we want are actual paint and distemper samples. I have had a complete translation of the text made, and had intended to-night to read extracts from it, but I want to leave as much time as possible for discussion.

I desire to thank those manufacturers of paints, dyes, and printers' ink who have so kindly sent me the colour specimens which are now exhibited, and I trust that at the conclusion of the proceedings those present will examine them.

In conclusion I suggest that if the Paint and Varnish Society will undertake this most important work it will immensely increase its usefulness to the paint trade, it will gain kudos, and add to its funds—surely three very desirable objects to attain.

Although unusual, I shall, if you, Mr. President, will permit me, offer a formal resolution, viz., "That a committee be appointed to take measures to issue by this society a British Standard Colour Card of Paints and Distempers."

MESSRS. BRIGGS, WOLSTENHOLME & THORNE have been instructed by the Liverpool Select Vestry to prepare sketch plans of the proposed epileptic colony at Maghull. The cost is expected to be between 39,000*l.* and 45,000*l.*, at an average of 130*l.* or 150*l.* per bed respectively.

UNIVERSITY OF LONDON LECTURES
ON ARCHITECTURE.

"THE Fora and Rectangular Temples" were the subject of Mr. Banister Fletcher's lecture on January 10 at the British Museum. The Forum of the Romans corresponded to the Agora of the Greeks, and in some degree to the market-place of the continental town of to-day.

It was an open space around which were grouped the principal buildings, the temples, basilicas, senate house (curia), shops, &c.; sometimes it was surrounded by colonnades and porticos, and was a general meeting-place for the citizens. Political gatherings, commercial transactions and displays of various descriptions, amongst others gladiatorial combats, usually took place in the Forum, until the latter were removed to the amphitheatres specially built for the purpose.

The Forum Romanum, which is the oldest, lies between the Palatine and Capitoline Hills, and was always called the Forum, or the Forum Magnum even after the building of Trajan's Forum, which far surpassed it in magnificence and size. In time the old Forum became inadequate to the necessities of the people. Towards the end of the Republic more law courts, exchanges and buildings of utility were required; these were supplied by the succeeding Emperors, who built new fora which bore their names.

First among these was the Forum Julium, which was begun and partly completed by Julius Cæsar. The others were the Fora of Augustus, Vespasian, Nerva and Trajan. Besides the five imperial fora there were several smaller markets for bread, fish, swine, &c., as well as the Forum Olitorium and Boarium (the oil and cattle markets).

The Forum Romanum was the outcome of steady development, which began in the earliest times by the draining of the marshy swamp between the two hills by the Cloaca; it is an excellent example of town planning in regard to symmetry and beauty. The succeeding fora were all planned and executed within short periods, giving naturally a very different effect. The chief buildings in the Forum Romanum were as follows:—

The Temple of Vesta, the Goddess of the Hearth, whose shrine was the most sacred of all in Rome. It was a circular building on plan, having a central opening in the roof for the escape of the smoke; it resembled the circular temples of the Greek goddess Hestia, of whom Vesta was the Latin form. Here it was that the sacred fire was guarded night and day by the vestal virgins.

The other chief buildings were the Temple of Castor and Pollux, of which only three columns remain standing; the Basilica Julia; the Temple of Saturn, of which eight columns remain; the Temple of Vespasian, the Temple of Concord, the Temple of Julius, the Temple of Antoninus and Faustina (now the Church of S. Lorenzo), the Arches of Augustus and Septimius Severus, and the column of Phocas, which stands in the most prominent part of the Forum. This beautiful column was erected in 608 A.D. by Smaragdus, Exarch of Ravenna, to the memory of the tyrant Phocas, and is of the Corinthian order, with fluted shaft.

The rostrum was a raised platform, originally constructed of wood, placed on the comitium, a level area in front of the curia, from which addresses were made. The bronze beaks (or rostra) of vessels captured in war were fastened to the early wooden structure and gave the name to the succeeding tribunals. Julius Cæsar moved the site of the rostrum from the comitium and built a more permanent structure between the Arch of Severus and the Temple of Saturn commanding the whole length of the Forum; facing it Augustus built on the projecting podium of the Temple of Julius the rostrum known as the Rostrum Julia. There were several other less important platforms or tribunals round the Forum.

The Temples of Vespasian and Concord back on the Capitoline Rock, the plan of the latter being considerably affected by this fact; the cella had to be extended in its width, since it was impossible to obtain the required depth.

The Forum Julium was built by Julius Cæsar at an enormous expense owing to the site being in the political and commercial centre of Rome. In it he erected the temple to Venus Genetrix. The Temple of Mars Ultor commands the most prominent position in the Forum of Augustus, which equalled in size the Forum Romanum.

The Forum of Vespasian (Forum Pacis), which contained the Temple of Peace, of which nothing now remains, was much damaged by fire in the year 191 A.D.; it was restored in the reign of Septimius Severus, but very little is left now other than a part of the enclosing wall. There were other buildings of interest in the Forum, but Pliny describes the

Temple of Peace as being one of the four most magnificent buildings in Rome.

The Forum of Nerva was a narrow strip of ground between the Forum of Vespasian and that of Augustus. It was begun by Domitian and completed by Nerva. It contained a temple dedicated to Minerva, the cella having an apsidal termination.

The Forum of Trajan was a work of great magnificence. It covered a large area, the whole scheme being designed by the Greek architect Apollodorus, of Damascus. The buildings were not all contained in the Forum, as in other cases. It was approached by the Arch of Trajan, flanked by a dipteral peristyle which encircled the whole space and in which were two large semi-circular exedrae and shops. On the north-east the ground had to be cut into the Quirinal Hill to a great depth. There are several coins representing the Arch of Trajan, which has been destroyed. With the aid of these we can restore in imagination its appearance, its eight beautiful columns, entablature and most of its sculpture having been used for Constantine's Arch.

Facing the entrance of the Forum and occupying its entire breadth was the façade of the Basilica Ulpia; beyond this the two libraries with the column in the centre; and facing this again the Temple of Trajan, which stood in an open space surrounded by a large dipteral peribolus. This forum was used in the Middle Ages as a marble quarry for churches and palaces, and even much of its marble calcined and used for lime.

Other fora at Pompeii and remains in this country at Silchester and Corbridge, in Northumberland, were discussed.

Rectangular Temples.—The Temple of Fortuna Virilis was described as a typical Roman example. This temple is one of the best-preserved in Rome and is of early date. It is now the Church of S. Maria Egiziaca. It is a pseudo-peripteral-prostyle-tetrastyle temple of the Ionic order. The columns are attached, thus allowing as much space as possible to the cella, which was in Roman temples used as a place where valuable objects might be stored together with sculpture from Greece and other spoils.

The Roman temple was not orientated, as the Greek, but generally faced the forum. It was built on a high podium, the ends of which projected, and was approached by a flight of steps. The Temples of Mars Ultor, Concord, Castor and Pollux, Antoninus and Faustina, as well as examples at Pompeii, Nîmes and Baalbec, were all dealt with by the lecturer in detail as the examples appeared upon the screen.

SOCIETY OF ARCHITECTS *v.* KENDRICK.

IN the Chancery Division on Thursday, January 12, Mr. Justice Joyce had again before him the case of the Society of Architects *v.* Kendrick, on a motion for judgment in default of appearance.

The matter was previously before his Lordship on April 22 last, when the plaintiff Society sought to restrain the defendant, Charles Edward Kendrick, a builder of Staffordshire, from using the letters M.S.A., but although there was no appearance by the defendant, his Lordship refused an injunction and dismissed the motion.

Mr. Younger, K.C., for the Society, now said that since the matter was last before the Court something had happened which to a most material extent affected one of the principal grounds of his Lordship's decision. The statement of claim had now been properly served on Kendrick, and consequently there had been brought to his notice the allegations made against him. One of the grounds which affected his Lordship on the previous occasion was that it was quite possible this document might contain allegations which the defendant would seriously dispute. After his Lordship dismissed the previous motion the plaintiff Society gave notice of appeal, but the Registrar refused to draw up his Lordship's order because the plaintiffs had committed the irregularity of filing a notice of motion for judgment on the same day, instead of waiting the requisite ten days to see if defendant would enter an appearance. The appeal was accordingly dismissed.

Mr. Justice Joyce: If the appeal was dismissed there is an end to the case.

Mr. Neville (with Mr. Younger) said an application was made to withdraw the appeal because they could not go on without the Judge's order; but the Court of Appeal thought the best way was to dismiss the appeal.

Mr. Younger said that the defendant was then served with this fresh notice. The defendant was a person who, being a builder, professed to be an architect.

Mr. Justice Joyce: There is no harm in that. Is he carrying on business now?

Mr. Younger: We have no reason to suppose anything to the contrary.

Mr. Justice Joyce: It is not a motion asking for damages or alleging damage, but simply asking for an injunction against a man to enable you to move to commit him later on. It is a very serious matter, and I am not going to grant an injunction against a man who does not appear unless I know all the facts. I think, on reflection, I was wrong before in dismissing the motion. I should have simply made no order, leaving it to you to go on with your action if you pleased, when the facts could have been inquired into, and the Court could see what the defendant was doing, and how far the facts in the statement of claim were true.

Mr. Younger: Your Lordship's judgment has given rise to much discussion in the professional papers.

Mr. Justice Joyce: Yes, and I have been much abused in anonymous letters and otherwise.

Mr. Younger said that the offence was in connection with the erection of a very large house, and defendant's defence was that he could produce his diploma if desired. He did not think a "big" man should consider it necessary to resort to such practices.

Mr. Justice Joyce: He may be entitled to.

Mr. Younger: It is very bad taste.

Mr. Justice Joyce: I agree. It is very annoying.

Mr. Younger said it was like the Scotch case of the man who threatened to paint his house tartan, and his neighbour objected. It was very annoying and very bad taste, but in that case he could not be stopped.

Mr. Justice Joyce: I feel rather more strongly with regard to the nature of this case than I did before, and you are in a considerable mess with your procedure. Besides your appeal from me has been dismissed. Now you want me to hear the motion again on practically the same material. The defendant was entitled from what he saw in the papers to think that the case was dismissed. I am not going to grant an injunction against a man while the proceedings are in this position.

Mr. Younger: Then I ask your Lordship to dismiss the action.

Mr. Justice Joyce: No; in the exercise of my discretion I decline to make any order on this motion under the peculiar circumstances. I give you leave to appeal, and you can take what steps you like. Perhaps the Court of Appeal will help you out of the difficulty.

TOWN PLANNING IN PRACTICE.

A CONFERENCE organised by the National Housing and Town Planning Council was held in London on Saturday afternoon last, at the Alpine Club, Savile Row, W., to consider the subject of "Town Planning in Practice." The chief feature of the meeting was the reading of papers by the chairman and clerk of the Ruislip-Northwood Urban District Council, giving an account of the procedure followed by that body in regard to the preparation of a town plan for the Ruislip-Northwood area. Round the walls were hung a large number of plans submitted in the recent town-planning competition for the Ruislip Manor Estate.

Alderman W. Thompson, in opening the proceedings, said he considered the conference they were about to hold would be one of the most practical and, from the point of view of the administration of the Housing and Town Planning Act, one of the most important ever held in this country. Considerably more than half of the eighty local authorities who administered London had deputed representatives to attend the conference in order that they might see how far things had proceeded. It was fourteen months since the Act was passed and, although no local authority had yet got a town plan, a great many were looking about to see what others were doing. Experience had abundantly proved that the whole likelihood of success in the working of the Act depended upon co-operation, and the Local Government Board recognised as much as anybody that everything depended upon the Act's interpretation by the authorities concerned. If there arose the right spirit of co-operation it would be an excellent thing that so much individual interpretation was allowed. The advice of the National Housing and Town Planning Council was to go to the Local Government Board in every difficulty, for the latter were really anxious that they should be consulted. The main points to determine in preparing a scheme were, first, the area; second, the roads; third, the allocation of certain defined areas for certain definite purposes; fourth, the

provision of open spaces; fifth, the number of houses to be provided to the acre; and, sixth, the modification of by-laws in exchange for considerations which the landowners will give to the public.

Councillor Frank M. Elgood (chairman of the Town Planning Committee of the Ruislip-Northwood Urban District Council), in describing the experiences of that body, said it would have been very useful to them if they had known from the first as much about the best method of procedure as they did now. Therefore he hoped that their experience might prove helpful and encouraging to others. The Council had in the first place a very large area under their control, consisting of the parish—Ruislip—which was the third largest in Middlesex. It embraced about 6,582 acres, practically in the form of a parallelogram. At the northern end lies Northwood. At the southern end is the agricultural land.

About twenty years ago, when the first railway was brought into the parish, a start in development commenced. Another railway line was completed in 1904, and in 1906 there was a third railway—namely, the joint line of the Great Central and Great Western. When the district began to develop after the first railway appeared it did it on a more or less comprehensive but not an ideal scheme. A great blot occurred in leaving plots out which have subsequently been sold without restrictions. These have caused a great deal of trouble. Judging by their own experience the title "Housing and Town Planning Act" was, he thought, a little unfortunate; for the Act would obviously at first be applied in the majority of cases to country rather than to town areas, and might consequently be better called a Country Planning Act. The Urban District Council had at first to meet with some opposition, especially from such people as held up their hands in horror at the mere mention of a garden city. Considerable objections were also raised in the district against the idea of it becoming a town at all. It was very necessary to allay this prejudice, for, however enlightened a Town Council might be, they could not do anything unless they had the ratepayers at their backs. The invaluable Memorandum on the Housing and Town Planning Act issued by the Local Government Board was considered last year by one of the Council's committees. The first thing done was to communicate with some of the great landowners, for it was recognised that the guiding spirit of the Act was co-operation. Fortunately two or three great landowners between them controlled practically half the area, one of these being King's College, Cambridge.

The Council commenced by preparing a plan showing the principal landowners in the parish. Next they appointed a definite Town Planning Committee. The minds of this committee were at first absolutely blank on the matter, for the members did not include anyone of experience. The first thing to decide was whether they should be best advised to adopt the scheme put forward by King's College, or to prepare a scheme of their own, on to which the other could be grafted. At the beginning the most favoured idea was to do the former, and thereby to save themselves expense and trouble. But when it was seen to be absolutely necessary to incorporate other lands it was quickly decided to lay down a scheme of their own. It was agreed to eliminate two areas as being practically developed. This latter proved a difficult matter and caused a certain amount of jealousy among landowners, who were unable to understand why their own land should have been included and others left out. Then it was decided to include an area of some fifty acres outside the parish boundaries. The whole scheme dealt with was nearer 6,000 than 5,000 acres. Only six objections were raised, and those came from inconsiderable landowners.

It was not until August 8 that the Council decided to consider a formal resolution to make application for authority to prepare a town-planning scheme. The necessary conference for securing the "co-operation on the part of the local authority with the owners and other persons interested in the land proposed to be included in the scheme" was held at Northwood in November last. No expressed opposition was then raised, and the Council made a point of trying to conciliate owners and to explain their rights.

There was a general feeling that an owner might wake up and find a scheme cut and dried which would put a veto on his land and threaten a serious infringement of his liberties. But anything which might be done adversely affecting the owners of property was subject to compensation, and it was as well to tell people that, for they were sure to find it out, and the local authorities might just as well get the credit for telling them. One thing he felt strongly about was the preservation of points of beauty, good view, and spots

MODERN EUROPEAN ARCHITECTURE.

GERMANY.

[From *Der Profanbau*.

THE CHARLOTTENBURG BRIDGE, BERLIN.—Professor SCHAEDE, Architect.

of historical and antiquarian interest. Whatever was done he hoped they would be sufficiently enlightened always to preserve anything in their districts of architectural, or antiquarian, or historic interest. They should not be in too great a hurry; they had to see how the thing worked, and if there was no immediate intention of land being made ready for development, there was no good in formulating a cut and dried detailed scheme; they should lay down some general lines, and let it be understood there was every possibility of settling a detailed scheme.

One of the Council's great difficulties had been to get the owners to define such objections as they had, for generally they merely objected to being included in the scheme at all. In some cases the Council had been able to talk the objectors over, and others would have to be brought to the Local Government Board. One important form of co-operation was that with the Board. A great deal had been heard about their regulations, but if any authority appealed to the Local Board in good time they would get a tremendous amount of help.

Mr. E. R. Abbot, clerk to the Ruislip-Northwood District Council, explained the various steps taken by his department in furthering the scheme. He made special reference to the help and advice freely given by the Local Government Board. When the regulations had been thoroughly digested it would not, he said, be found there was much in them to complain of. One of the things they had discovered was that local authorities did not know with any degree of accuracy who the landowners were. It was absolutely necessary that there should be an accurate book of reference. He thought the sooner all local authorities in the neighbourhood of London and in large towns who had undeveloped land took up schemes the better, for any district which did not do so would be left behind. Let them not be deterred by the supposed exactions of the regulations, for when they actually got to them these would be got over.

A FURTHER step forward in the work of the National Advisory Town Planning Committee will be taken by the convening of a national conference to discuss details of

practical town-planning administration on Thursday and Friday, February 23 and 24, at Liverpool.

The conference will be held in the town planning department (School of Civic Design) of the Liverpool University and the subjects to be considered at the Conference will be as follows:—

1. The actual details of the *prima facie* case to accompany an application to the Local Government Board for permission to prepare a town-planning scheme. The regulation issued by the Local Government Board on this point, received the close attention of the advisory committee at several meetings in 1910, and finally an interview took place between representatives of the committee and the comptroller of the housing and town planning department of the Local Government Board. The report of this interview will be placed before the conference, together with copies of the maps prepared by the Birmingham City Council and the Ruislip Northwood Urban District Council, and full particulars of the applications made by these local authorities to the Local Government Board for permission to prepare schemes.

The representatives attending the conference will then have before them a clear statement of the steps which must be taken in the preliminary stages of town planning procedure.

2. The extent to which a local authority should, under a town-planning scheme, relax or alter conditions relating to widths of roads and methods of road construction. This will give the conference an opportunity of considering in detail the various types of road which may be constructed under town-planning schemes, and for which the existing by-law may be suspended. The subject will be placed before the conference in a memorandum, in the preparation of which several municipal engineers and surveyors will collaborate.

3. The standards as to limitation of the number of houses per acre and the best practical methods of applying these standards in the preparation of town-planning schemes. The provision of open spaces and adequate garden space depends on the wise use of the invaluable power given under section 59 of the Housing and Town Planning Act to local

authorities, enabling them, without incurring compensation, to prescribe the average number of houses per acre in a town-planning scheme. A memorandum on this subject will be submitted to the conference, and it is hoped that valuable guidance will be given to local authorities as a result of the full discussion of this vital point.

In order that additional value may be given to the conference, a collection of town plans and suggested road schemes will be on exhibition during the conference.

The object of calling the conference is to give a stimulus to the practical administration of the Act, and it is hoped that, as in the case of the earlier conferences called by the committee, local authorities will be well represented at the conference now being convened.

ENGINEERING PLANT IN INSTITUTIONS.*

TO deal exhaustively with this subject sufficient material is available to fill a volume; but in accepting your kind invitation to read this paper the writer feels that, if he tells you nothing new, a useful purpose will be served if it results in an exchange of the experience of those whose practice as engineers-in-charge covers the engineering plant of, perhaps, every conceivable type of public institution.

The Boiler-house.—Without further introduction to our subject we may, perhaps, assume that in the majority of institutions steam is generated principally for the distribution of heat, for warming buildings, heating water, and for cooking and laundry purposes, and only to a minor, and usually incidental, degree for power.

While it would be invidious, and not altogether desirable, to make comparisons between any specific makes of boilers, it may be broadly asserted that boilers of large capacity for steam storage and steady steaming qualities are best suited to institution requirements. The type of boiler to which this description may be best applied is the Lancashire, and its offshoots and improvements; and although it is contended by some that this type cannot compare for thermal efficiency with some of the tubular varieties, for steady work they are very difficult to surpass.

For the virtues of the water-tube boiler as a rapid steam generator there is much to be said, on account of its construction, which lends itself readily to the promotion of a good circulation of the water, and on this account water-tubes are extensively employed in some boilers of the Lancashire and kindred types; but the quality of steady steaming is more desirable for institution work than ability to cope with a sudden demand, for which the water-tube boiler is particularly suitable.

The care of boilers is a subject in itself, and on the amount of care bestowed upon a boiler depends, to a very great extent, the length of its life. The greatest danger which a boiler runs, in the course of its career, is the interposition of a non-conducting substance between the boiler-plate and the water. This substance may be a chemical substance held in suspension or solution in the feed water, and deposited in the boiler by evaporation—or it may be grease. To allow the latter substance to get into the boiler is unpardonable; being quite foreign to water, ordinary care can prevent its entrance. This usually occurs through a too zealous endeavour to utilise all the heat in exhaust steam. The day is now past when, as formerly, this product is wasted, and exhaust steam is condensed to recover its heat for generating hot water and for heating. Before being applied to this purpose some attempt is made to rid it of the grease which it picks up from the cylinder lubricant, by passing it through a grease separator, of which we shall have a word to add presently. Although makers variously claim that their particular appliance extracts from 80 to 90 per cent. of the grease from the steam, no maker is bold enough to claim an extraction of 100 per cent. Of the proportion remaining part, at least, becomes emulsified in the condensed water, and it is almost impossible to filter it from the condensed water. The only really successful way to remove it known to the writer is by saponifying the grease with an alkali, when the particles adhere together, and are easily filtered out. Plants of this nature are usually only made for dealing with large quantities of greasy condense water, and small quantities are then far better wasted than returned to the boiler for the sake of its remaining heat. When grease is deposited on the inner surfaces of the plates it is very liable to cause local overheating and damage to the boiler.

The other foreign substance referred to is rather more troublesome. It has been asserted that a coating of scale

$\frac{1}{8}$ inch thick reduces the efficiency of heating surface 15 per cent., and many methods are adopted for either preventing its entrance, reducing its quantity, or facilitating its removal. Feed water carries these impurities in proportion to its temperature. When heated some of the scale-forming salts are given up, and if this heating of the feed water is accomplished by exhaust steam a double economy is effected. Among other methods employed may be mentioned the addition of chemical substances to the feed water to alter the character of the scale, making it soft and easy of removal; and chemically softening water before use by treating it with reagents, which chemically combine with, and precipitate, the substances contained in the feed water. This latter method is not without its disadvantages, as the softened water frequently exercises a destructive effect upon the boiler-plates.

One of the most original of the precautions against the ill-effects of scale is a substance—which is itself a good conductor of heat, and to which scale will not adhere—painted on the inner surface of the boiler-plate. In a boiler treated with this preparation the scale is often found to crack off by itself and fall to the bottom of the boiler, and that which still adheres is easily removed. The efficiency of a boiler depends upon its ability to transfer to the water as much as possible of the heat contained in the fuel. If the whole of the heat contained in a good quality steam coal could be utilised 5.7 horse-power hours could be obtained from a single pound. The nearest we have to this in practice is 1.25 horse-power hours with a suction-gas apparatus, or 22 per cent. thermal efficiency. The chief losses in a steam plant are occasioned by (a) the gases resulting from combustion passing to the chimney at too high a temperature, (b) the leakage of cold air through faulty boiler settings and flues, (c) an insufficiency of air for complete combustion, and (d) the wastage of exhaust steam and condense water.

The first cause is often the result of boilers being too small for the duty required of them. The temperature of the gases—for economy—leaving a steam boiler should not exceed 400° Fahr., and for the purpose of checking this a useful item in the boiler-room equipment is a pyrometer. Pyrometers are of various types, the operating principles of the best-known being, variously, the heating of water by cooling a known weight of metal of given specific heat, the expansion of gases, and by the difference in electrical resistance of metals at different temperatures. A rough-and-ready means of determining the temperature is by inserting in the flue strips of metal of different melting-points. Thus, tin melts at 442° Fahr., lead at 617° Fahr., zinc at 780° Fahr., and aluminium at 1,175° Fahr., and by hanging strips of each of these metals in the flue the approximate temperature may be determined.

In the interests of fuel economy it is good policy to employ boilers of ample capacity. Since the transmission of heat through boiler-plates is proportional to the difference of temperature on each side of the plate, it will follow that to increase the output of steam from a given area of surface it will be necessary to increase the temperature and rate of combustion; or, in homely language, to force the fires. This must of necessity increase the temperature of the gases passing to atmosphere and reduce the thermal efficiency of the boiler.

To utilise the heat of these waste gases an apparatus which is employed in boiler plants where the flue temperature is high is an economiser. This is a tubular feed heater, having for its object the heating of the feed water by flue gases.

The construction of an economiser is, in most cases, of 4-inch diameter tubes, expanded into special headers, fitted with access lids over each tube for cleaning. A mechanical scraping gear is worked by chains to keep the outside of the tubes free from carbon deposit, which is a very effective non-conductor of heat. Each tube has a capacity of approximately 1 cubic foot of water, and the size of the economiser is based upon the principle of the entire economiser being pumped through once per hour.

An important point in the use of economisers is to prevent the feed water entering too cold. The result of this is to cause condensation to form on the tubes, to which particles of dust and carbon adhere, resulting in a great loss of efficiency, besides being very troublesome to remove. When feed water is in use at a lower temperature than 90° it is usual to make a small connection from the delivery pipe, after leaving the economiser, to the feed-pump suction, to slightly warm the water. Very little advantage is obtained by the use of an economiser where the flue gases pass to the chimney at less than 350°, but at higher temperatures considerable economy results—often as high as 20 per cent.

Low temperature chimney gases affect the draught of boilers. The combustion of a pound of coal requires approxi-

* A paper read before the Association of Engineers-in-Charge on January 11 by Alfred E. Wheeler (Prize Medallist, R.San.I.).

mately 15 to 20 lbs. of air (200 to 260 cubic feet). To supply this air is one of the functions of the chimney, and the flow in the chimney is proportional to the height and temperature. The flues of a boiler are often of great length, which involves much friction, and it will be readily seen that the air supply must suffer if the temperature falls too low.

One of the direct results of shortage of air supply is that part of the fuel gases are distilled by heat and pass to the chimney as carbon-monoxide, unconsumed and wasted.

The steam fittings of boilers merit some passing notice. Seeing their importance, they should be of a substantial build, and only those least liable to possibility of failure should be employed. A not uncommon fault is for the main steam valve to be too small, while, in order to prevent priming, it is wise to err on the other side.

Perforated anti-priming pipes are always fixed inside the boiler, but to reduce the initial velocity of steam leaving the boiler is a still better safeguard.

Isolating valves on the main steam outlet and blow-out connection are now seldom omitted, and since nothing should be left undone to secure the safety of those whose business it is to enter boilers while others in the range are at work, locking pattern blow-out cocks should be employed, from which the operating key cannot be removed while the cock is open.

Distributing perforated feed pipes in the boiler from the check-feed valve prevents local strains in the boiler-plates by injecting large quantities of low temperature water. Even with this precaution it is not at all uncommon for the joints of a boiler to leak through feeding with low temperature feed water. This is a further advantage in the practice of feed heating.

Feed Heating.—We have already dealt with one method of feed heating in our remarks on economisers.

Apart from the undoubted advantages which the practice affords in the matter of fuel economy it has other indirect advantages which cannot be overlooked. For a long time a fierce controversy raged around the question whether feed heating by live steam resulted in economy of fuel, and although it was impossible to reason out, except by indirect means, in spite of the obvious anomaly, it was believed in by people whose opinions were entitled to respect. This belief was finally disposed of by Prof. Nicholson, in a paper read before the Institution of Mechanical Engineers.

There are two types of feed heaters, viz., the open type and the tubular type. In the first type exhaust steam is admitted after first being passed through a grease separator, and is condensed on perforated plates inside the heater, over which trickles the returning condense (or cold) water, which falls heated to a hot well in the bottom of the heater, to which is connected the suction of the feed pump. A float worked by the water level of the hot well controls the admission of the water, so that the condensing plates cannot flood. This is quite the best system of feed heating where a grease filtration plant is in use, as no back pressure is put upon feed pumps or engines, and a very large proportion of the original scale is dropped here instead of the boiler, and is easily removed.

(To be continued.)



[The Editor will not be responsible for the opinions expressed by Correspondents.]

Petrol Air-Gas.

SIR,—Having noticed that Professor Smith in his lecture states that "air will retain three times more hexane (C_6H_{14}) at 60° Fahr. than at 32° Fahr.," I desire to express my opinion of the thorough unreliability of thermostats used in conjunction with petrol air-gas generating plants.

The average outdoor temperature of the atmosphere of the British Isles is 50° to 55° Fahr. Temperatures may be as low as 5° Fahr. or as high as 90° Fahr. in the shade.

Of what use would be a thermostat when the temperature of everything outside would be 5° or 90° Fahr.?

With sudden and so frequent changes of temperature as we are accustomed to, the only reasonable method to secure a perfectly uniform quality of gas under varying temperatures is to set the regulator of the petrol feed daily on starting. The temperature of generating plant cannot alter in one day sufficiently to be noticeable on the lights.

Professor Redwood's research work is quoted to the effect that 100 volumes of air at 50° Fahr. will retain 17.5 per cent. of gasoline vapour of 0.65 density.

Therefore, if we dilute this rich mixture the air will more easily retain the proportion of spirit vapour to air; at 17.5 per cent. to 100 volumes this equals 580 cubic feet of gas of 17.5 per cent. quality to the gallon.

If another 100 volumes of air be added the vapour and air would be one of 8.75 per cent., when 1,160 cubic feet would be obtained of this quality.

By adding still another 100 volumes of air a 4.37 per cent. mixture is obtained, while producing 1,740 cubic feet of gas to the gallon.

The writer has seen a test made with .715 spirit which at 60° Fahr. gave a volume of 190 cubic feet of the vapour to one gallon.

A production of 1,900 cubic feet of petrol air-gas to the gallon would thus produce a 10 per cent. mixture.

Being personally interested in the manufacture of petrol air-gas producing plants I am anxious to have an explanation of the results mentioned on page 361, viz.: "Shell spirit of .720 to .725 specific gravity, with a production of 1,840 cubic feet of gas per gallon, is said to give a 1½ per cent. petrol vapour to 98½ per cent. of air." Is this correct?

In your issue of January 6 (p. 21) it is there stated that a 1½ per cent. to 2 per cent. mixture is a dangerously explosive one. How does the 1½ per cent. to 2 per cent. mixture come in when one gallon of petrol vaporised to mix with added air only produces 1,840 cubic feet? And is it explosive?

I have to enter my protest at the lecturer's expressed opinion of the construction of the "Centenary" patent turbine gas generator (page 330). He says of it: "Revolving in D is an arrangement which will be recognised as a kind of reversed wet gas meter."

The diagram really shows a nine-chambered turbine. Each of the nine compartments after generation and compression delivers its unit of gas into the central mixing chamber, where all units meet and mix before passing off to the gasholder.

The petrol spirit on the surface of the water prevents the entering air coming into contact with the water, and the body of water in the generator maintains a practically uniform temperature, modifying the fluctuations of outside temperatures.—I am, &c.

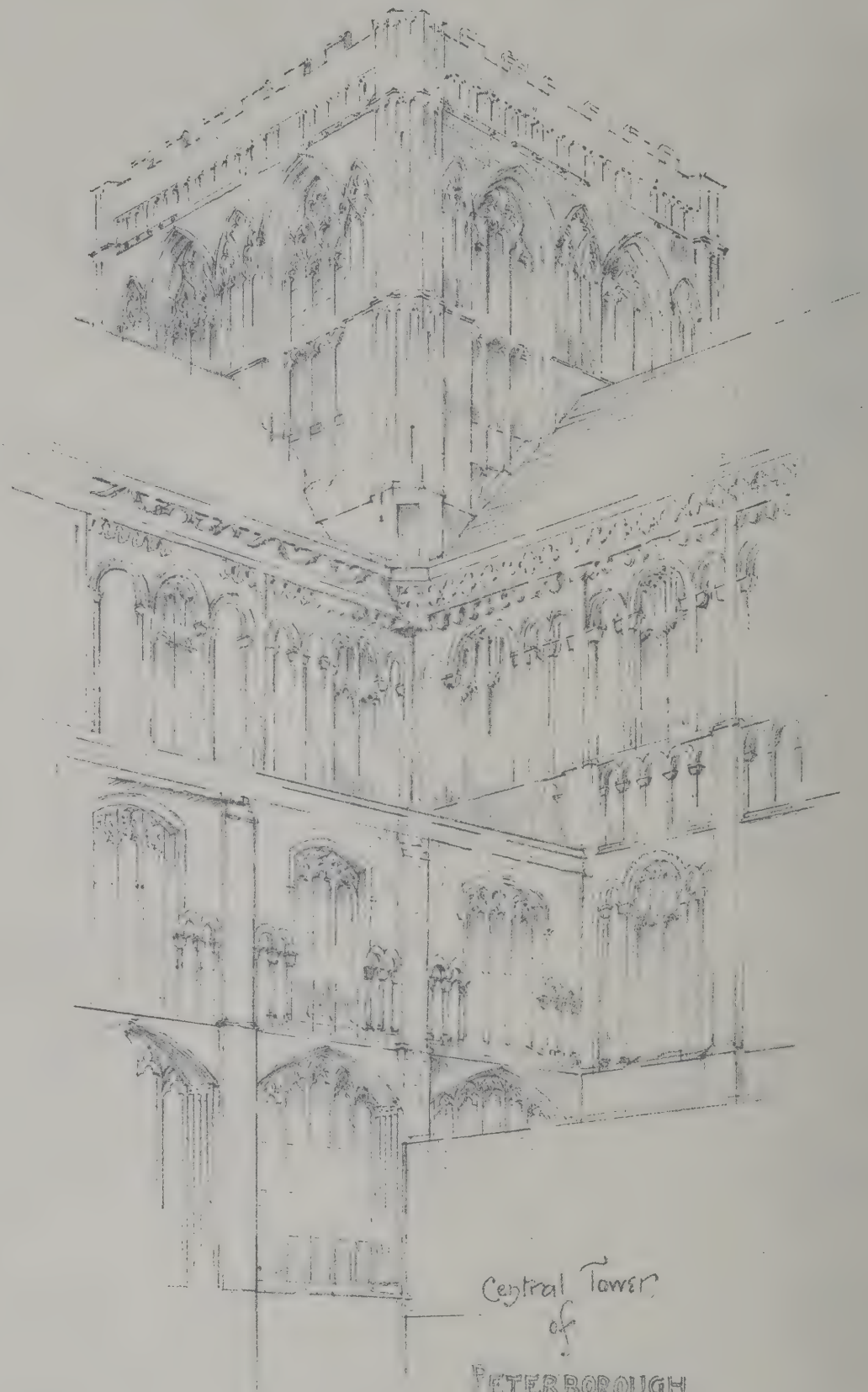
WILLIAM KEY.

109 Hope Street, Glasgow: January 16, 1911.

SIR,—Your correspondent Mr. R. W. A. Brewer, A.M.I.C.E., raises a point in connection with the dangers attendant on the use of petrol air-gas to go into the details of which would necessitate an extremely lengthy reply. This I shall avoid by saying at once that, on the whole, I am in fairly complete agreement with the views expressed by your correspondent. The position taken by myself throughout all the articles on the subject was that under *reasonable* conditions the question of safety was, relatively speaking, unimportant, since in no case did the danger really exceed that of coal-gas (quite a negligible quantity). It is quite true that "if a quantity (of 1½ or 2 per cent. mixture air-gas) is ignited in a closed container" it will cause an explosion (it is not strictly accurate that it will blow a small gasholder "to bits," because, as a matter of fact, the gasholder will simply be blown vertically upwards; possibly it will be crushed itself, but otherwise do little damage). The whole point hinges about the gas becoming *ignited*. I am aware that this may be comparatively easy on a laboratory bench, but it can only take place in practice under conditions which would render any gas-making plant dangerous—i.e. a general fire in the generator house. There is, of course, the objection that the gas may fire back along the pipes. This happens under exceptional conditions in a well-designed apparatus, because if the gauze is left off the burners the gas cannot be ignited, and if it is left on the burners the flame cannot travel back even if the machine is working. Firing back along the pipes can only take place if, immediately after the machine stops generating gas, persistent attempts are made to make the weak gas fire back by removing the gauze and applying a light; even then such attempts would in nine cases out of ten fail to work. Those who argue in favour of a 5 per cent. mixture must not forget that, should the supply of petrol give out, all the dangerous conditions which they consider exist with weak mixtures appear in their own machine without any special precautions to prevent firing back.

The writer "holds no brief" for weak mixture air-gas plants, and, as a matter of fact, is, equally with Mr. Brewer, inclined to favour a richer mixture, although chiefly for other reason than the question of safety.—I am, &c.,

C. A. M. SMITH.



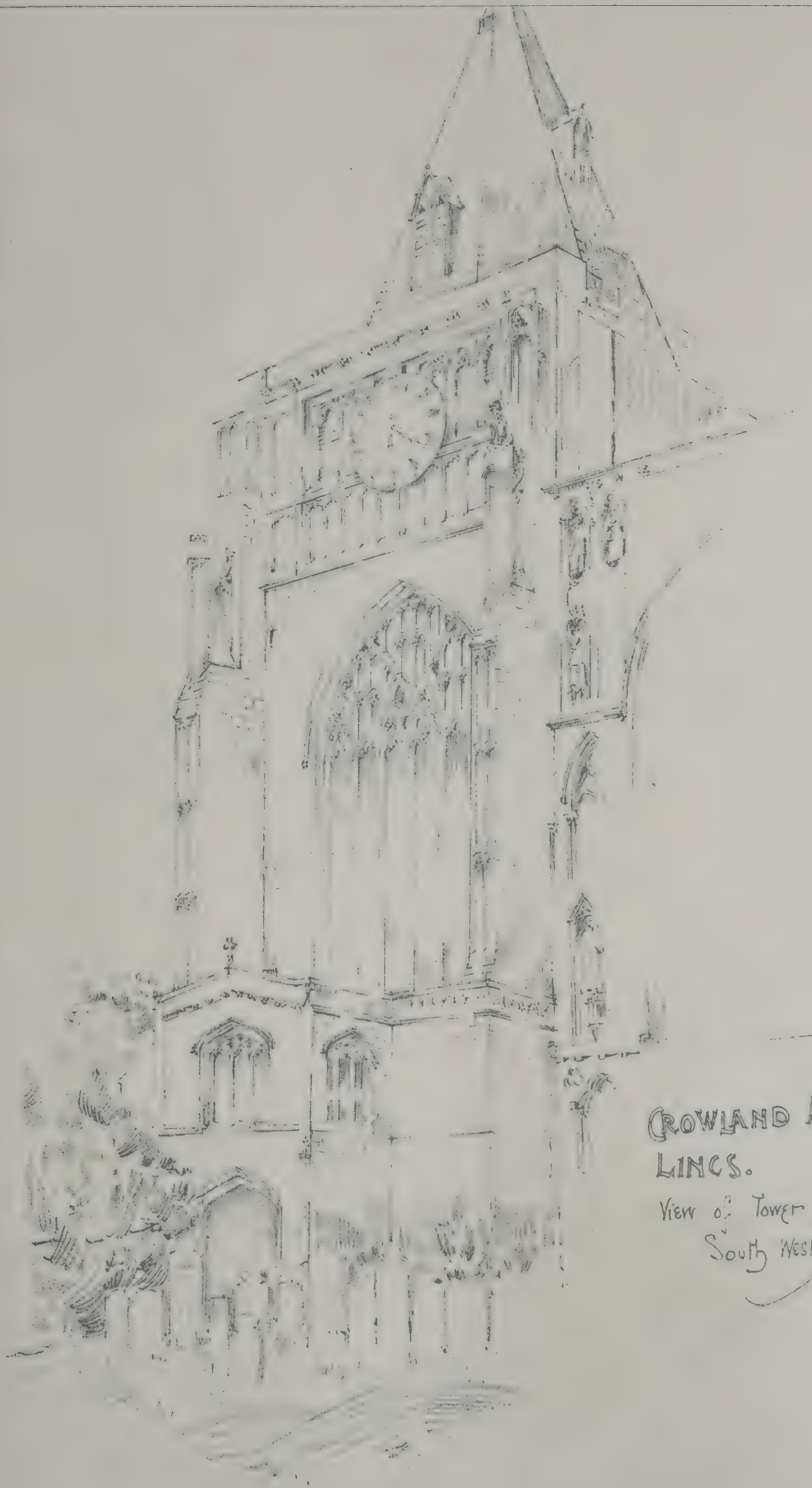
Central Tower
of
PETERBOROUGH
CATHEDRAL
from the
South West

August 1910
CH.W.

"INK- PHOTO" SPRAGUE & CO LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

TRAVELLING STUDENTSHIP DRAWING BY MR. CHARLES HENRY WALSH.

"THE ARCHITECT" STUDENTS' SKETCHING & MEASURING CLUB.



CROWLAND ABBEY.
Lincs.

View of Tower from
South West

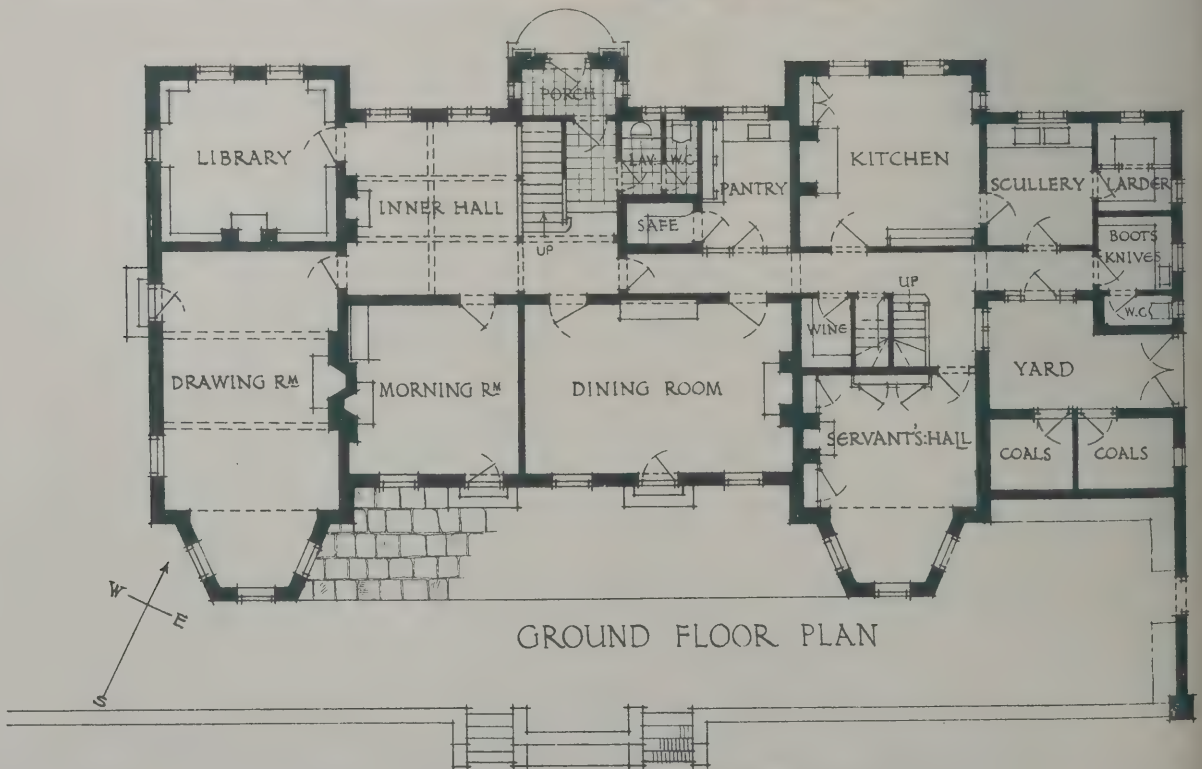
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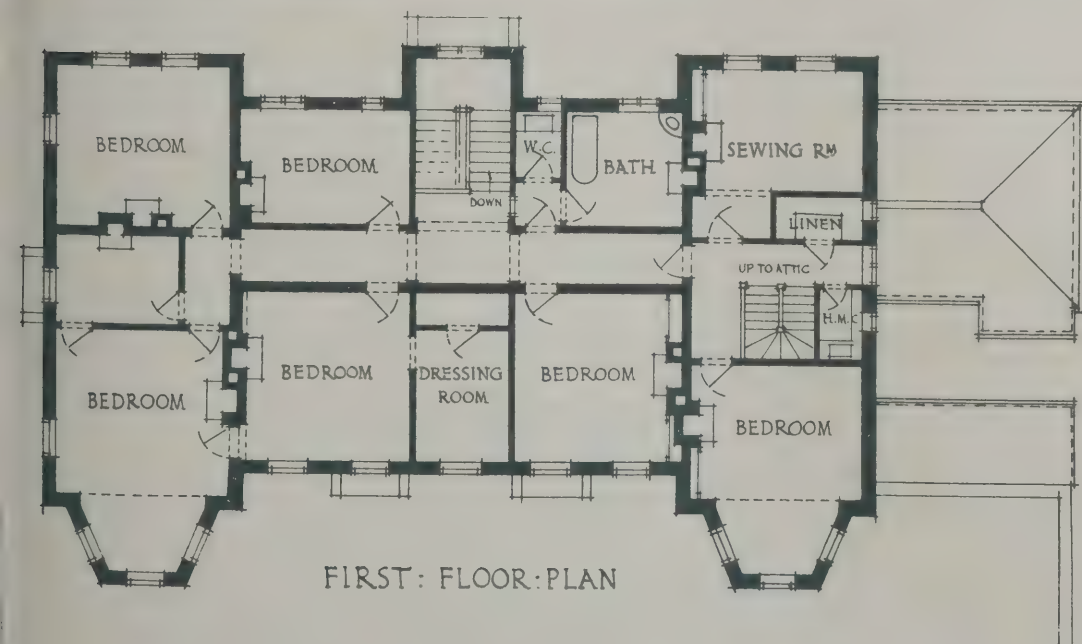
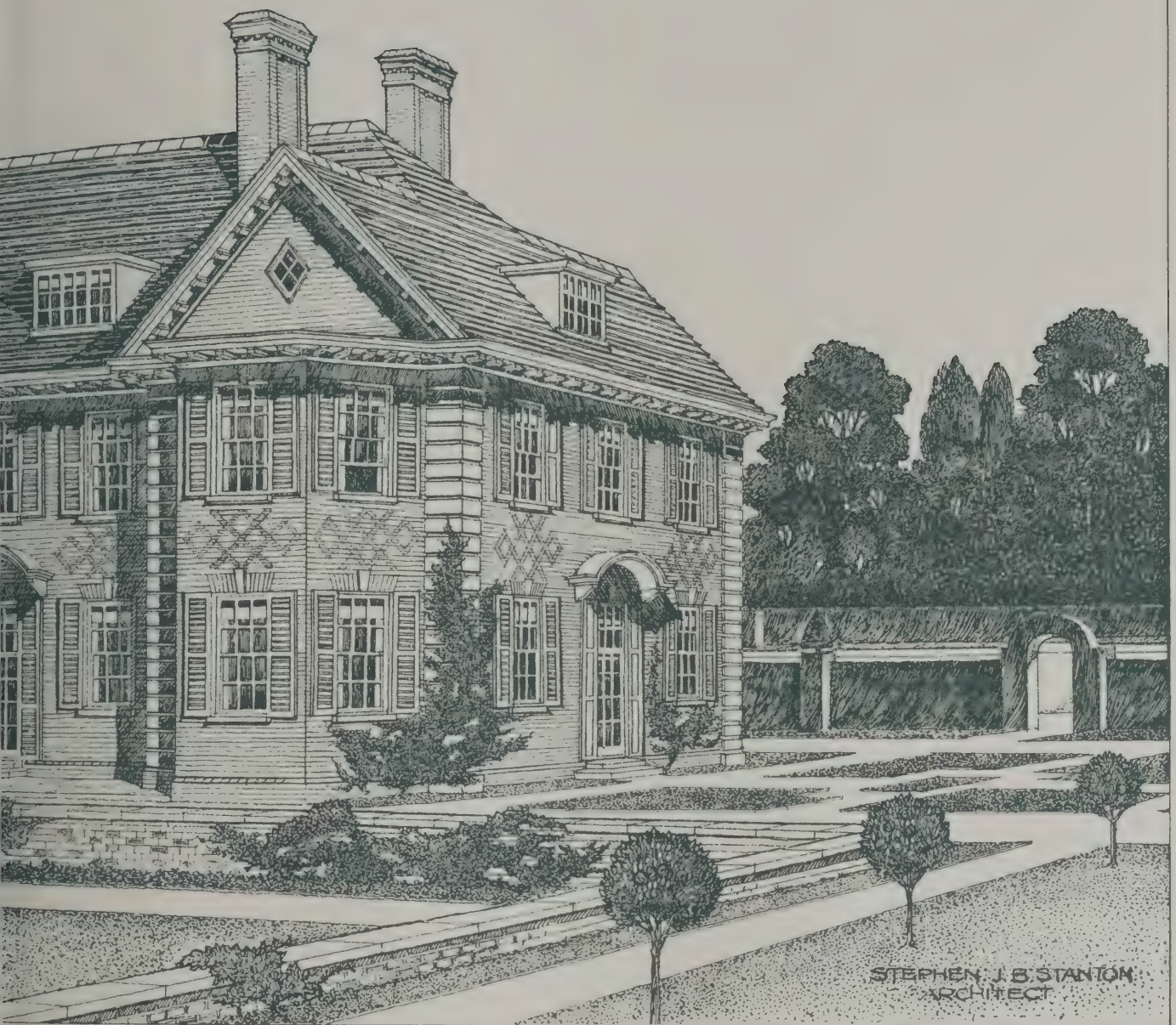
"INK- PHOTO" SPRAGUE & CO LTD 4 & 5, EAST HARDING STREET FETTER LANE E.C.

TRAVELLING STUDENTSHIP DRAWING BY MR. CHARLES HENRY WALSH.

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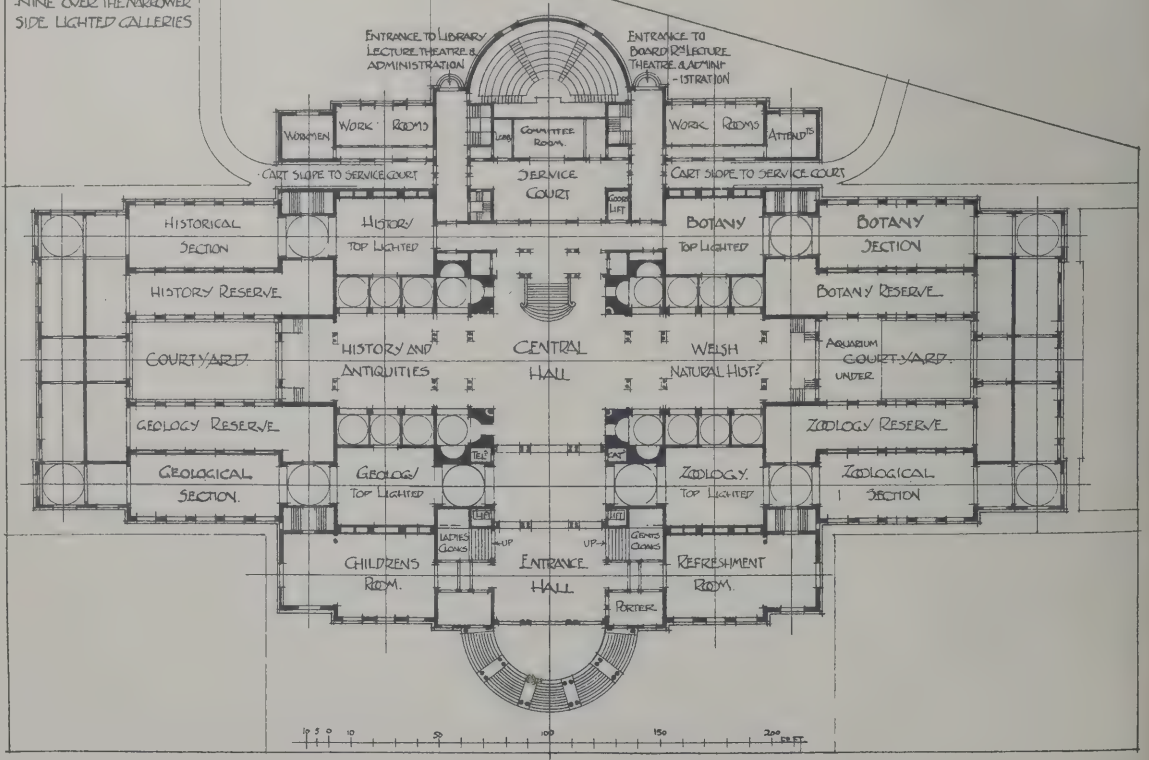
PROPOSED HOUSE
AT CHESHAM



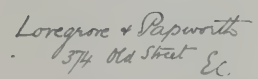




NOTE FURTHER SPACE
FOR RESERVE COLLECTIONS
IS ARRANGED IN MEZZA-
NINE OVER THE NARROWER
SIDE LIGHTED GALLERIES



A black and white architectural sketch of a large, classical-style building. The building features a long facade with numerous windows, some of which are grouped in sets of three. A prominent balcony with a decorative railing runs along the top of the main facade. The building is rendered in a sketchy, artistic style with visible lines and shading. In the foreground, there is a low wall or fence, and a few small figures of people are visible, providing a sense of scale. The background shows some trees and distant buildings, suggesting an urban setting. The overall tone is artistic and conceptual.



NATIONAL MUSEUM, CARDIFF.
PAPWORTH.

The Architect.

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FORTHCOMING EVENTS.

<i>Monday, January 30.</i>
Royal Institute of British Architects: President's Address to Students; presentation of Prizes and Studentships; and criticism of the drawings by Professor C. H. Reilly.
Royal Academy: Lectures on Sculpture by Professor W. R. Colton, A.R.A. (1) "The Sculptor."
<i>Tuesday, January 31.</i>
Illuminating Engineering Society: Resumed discussion of "Library Lighting."
<i>Wednesday, February 1.</i>
Royal Archaeological Institute: Mr. J. W. Willis Bond on "Ancient Bridges and their Impending Destruction."
Carpenters' Company: Mr. Henry Tanner, junr., on "The Art of the Woodworker."
<i>Thursday, February 2.</i>
Royal Academy: Lectures on Sculpture by Professor W. R. Colton, A.R.A. (2) "Education and Art."
<i>Friday, February 3.</i>
The Leicester and Leicestershire Society of Architects: Mr. Ald. A. E. Sawday on "The Town Estate."

WOOD CARVINGS IN ENGLISH CHURCHES.

OF all the components that went to make up the complete English mediæval church as a beautiful organism there is hardly one that is of higher interest than the woodwork, and particularly the carved woodwork, which, indeed, on most occasions comprehends all the visible timber, for scarce a feature was there in this material that was not adorned with carving.

Although time has brought decay, fire, iconoclasm, and "beautifying" or "restoration" as agents in the destruction of much that formerly existed, our English churches still contain an enormous wealth of wood carving that has perhaps had no small share in causing the many students of mediæval art to leave to Mr. FRANCIS BOND and those associated with him in the series of Church Art Handbooks now in course of publication by the Oxford University Press the task of systematically describing and classifying the examples that remain. Of the four volumes in the series to which we have referred that deal with the subject of wood carvings in English churches, the two by Mr. FRANCIS BOND* on "Misericords" and on "Stallwork, Thrones, and Chairs" respectively have now been published.

Modern developments in photography and the great increase in recent years of skill in the use of the camera by amateur photographers have alone rendered possible the preparation of such fully and beautifully illustrated books on special topics of mediæval art as those with which Mr. FRANCIS BOND has dealt in these two volumes. It needs lovers of mediæval art to give attention to the minutiae of detail, and, however much more valuable it may be to the individual student to make drawings rather than photographs, to the historian and critic of art the superior rapidity of the camera over the pencil, to say nothing of the greater accuracy of representation, makes possible the collection of a sufficiency of examples to illustrate his story.

In the volume on "Misericords," or as they are more popularly called, misereres, Mr. FRANCIS BOND has taken the opportunity of pointing out how, from their carvings, we may learn more of the every-day life of the common people of mediæval England than from almost any other source. Here we have depicted the daily life of the villages and of the villagers' homes, the methods of agri-

culture and of trades, the sports and pastimes, the costumes, the tools, and the household implements.

We have illustrated in the carvings of "Misericords" the beliefs of the Middle Ages in the tales and fables of Eastern and of Classical mythology and the ideas prevalent of the form and habits of birds, beasts, and fishes, both native and exotic, as well as of the moral lessons and analogies founded upon those ideas. Of these Mr. BOND treats at considerable length in an epitome of the Physiologus or Bestiary, without some knowledge of which it is impossible to understand the allusions and the lessons intended to be conveyed by the mediæval artists in the times when a pictorial or sculptured story was more generally and readily understood than the written or printed word. The wonderful zoological information of the Physiologus was supplemented and supported by the tales of travellers in the days when there was no Royal Geographical Society and the globe-trotter had not yet been evolved.

Mediæval romances, Æsop's fables, legends of saints, as well as scenes from both Old Testament and New Testament histories furnished the mediæval carver with subjects for incorporating by his craft what was really the popular literature of the day, besides jokes, somewhat coarse and cheap perhaps, and often chestnuts, that passed for wit when subtlety was non-essential.

Satire was freely employed, and its shafts were aimed at the amusements as well as the delinquencies of the gentry, jousting, music, and dancing; but Mr. BOND combats the often expressed idea that religion was satirised, and explains the meaning of foxes preaching in monastic habits and such like skits as being directed against the preaching of the mendicant friars by the secular clergy or parish priests, and the canons of the regular monastic orders who upheld the value of worship rather than sermons as the truest and highest expression of religion.

All these varied phases of mediæval life are discussed by Mr. BOND, whose volume on "Misericords" is highly valuable as an exposition of the life and thought of England in the Middle Ages, even more than as a revelation of Gothic art. The art of the carver of "Misericords" is often indeed of a lower order than the human or literary interest of the story he has to tell.

We come to quite a different type of craftsman when we follow Mr. BOND in the subject of his second volume, "Stalls and Tabernacle Work, Thrones and Chairs," the seats of the choristers and the dignitaries of the Church. On these were lavished the richest designs and the most exquisite workmanship of which the mediæval craftsmen in wood were capable, and Mr. BOND gives some figures

* Wood Carvings in English Churches. I. Misericords. By Francis Bond, M.A., Oxon., F.G.S., Hon. A.R.I.B.A., &c. (Henry Frowde, Oxford University Press. 7s. 6d. net.)

Wood Carvings in English Churches. II. Stalls and Tabernacle Work, Bishops' Thrones, and Chancel Chairs. By Francis Bond, M.A., Oxon., F.G.S., Hon. A.R.I.B.A., &c. (Henry Frowde, Oxford University Press. 6s. net.)

from the records of the cost of the stalls at Wells, which were destroyed in 1848, showing that the actual expenditure there amounted to 18,000*l.*, at the present-day value of money.

The author discusses the reasons that led to the placing of stalls in churches, their position, number, and arrangement, and then describes the treatment of canopied stalls, tracing their development somewhat in historical sequence after glancing at the few remains that exist of examples earlier than the fourteenth century. Of the early work of this century Mr. BOND characterises as the earliest, and perhaps the most beautiful, the stallwork in Winchester Cathedral, to which he assigns the approximate date of 1305 A.D. The stalls at Chichester he places at 1335, and then we come to Ely with a recorded date of commencement in 1338. Next there is the work at Gloucester about 1350. Then comes a group of stalls which it is not easy to date, but all of which are redolent of fourteenth-century inspiration; those of Lancaster Church, those of the Cathedral and All Saints' Church at Hereford, and those of Abergavenny Priory and Norwich Cathedral. Of these, Mr. BOND extols the Lancaster stalls as the *chef d'œuvre* of English woodwork, and after discussion he places their date as anterior to the Black Death in 1349-50. Their flamboyant character is remarkable, but Mr. BOND combats any idea that this is due to foreign craftsmen, and regards it as the natural development of the design of the first half of the fourteenth century, parallel with the latest Gothic work of France, Spain, and Flanders.

Stallwork with tabernacled canopies was a new form that came into vogue in the latter years of the fourteenth century, and here we find the most wonderful triumphs, in richness and elaboration at any rate, of English woodwork. Many of the glorious examples of this work are described and illustrated, and the author includes as specimens of English churches Dunblane and King's College, Aberdeen.

Renaissance stallwork occupies a chapter, and then we descend to the instances of stalls in parish churches, these being rarely found with canopies. The author discusses at considerable length the use of these stalls and the presence in the chancel of the laity.

Bishops' thrones and chairs in churches, particularly in chancels, necessitate a reference to stone examples as well as wood, some of which latter Mr. BOND assigns, and we think rightly, to a domestic origin, from which they have been elevated to a higher position by donation. This in particular applies to post-Reformation periods.

Thus the author brings to a conclusion a most delightful and valuable account of the marvellous fertility of design, the exquisite craftsmanship, and the pious generosity of mediæval England as exemplified in the woodwork of her churches.

NOTES AND COMMENTS.

IN the case of *BROWETT v. The Summerhill Colliery Co., Ltd.*, and others tried before Mr. Justice LAWRENCE in the King's Bench an interesting point arose with regard to the distance from a mine at which damage was possible to buildings. The plaintiff was the Rev. ARTHUR E. BROWETT, vicar of St. John's, Princes End, Tipton, and he sued the defendant company and its directors in respect of damage done to certain buildings and the letting down of the church, which it was alleged was due to the work of the colliery. Plaintiff sued as vicar and in possession of the fabric of the church of St. John and the land upon which it was built and the churchyard, vicarage, and schools. Plaintiff's allegation was that the shafts of the colliery on the north side of the church were now only at a distance of 50 yards, and in consequence of their working the church buildings had, and were still, subsiding. Counsel for the defence pointed out that in this case the workings of the colliery were 50 yards from the church, and upon the decided cases he argued that the company's workings were outside the zone of danger, and therefore the plaintiff had no right against them at all.

The Courts had held that a colliery was free to work as much as it liked outside a 50-yards zone. Counsel for the plaintiff asked his Lordship to say that 70 yards and not 50 yards was a safe working distance. His Lordship, in giving judgment, said the schools had been damaged and were now closed. The damage to the buildings commenced in October 1907 and continued till a recent date as consequent upon the operations of the colliery company. The colliery company were working two seams, some forty and eighty yards below the surface. His Lordship had no doubt the damage was caused by the operations of the defendant company. Defendants had failed to prove that the coal under the plaintiff's property had ever been worked. Taking into consideration the whole of the evidence, his Lordship thought that the colliery company were liable for the damage sustained by the plaintiff. That damage he assessed at 525*l.*, and he gave judgment for the plaintiff against the defendant company for 525*l.* and costs. He refused to grant an injunction.

THE idea that there is any definite distance, whether fifty yards or seventy yards, at which a deep excavation, be it for a mine or a tube railway, may safely be made without endangering the stability of neighbouring buildings is quite fallacious to those who have had any considerable experience. Even the empirical rule that an excavation will not affect the surface at a greater distance than its own depth is not in accordance with facts. We have no doubt from what we know of such matters that Mr. Justice LAWRENCE was quite right in his finding that the damage to the buildings in this case was caused by the mining operations.

WHEN the competition for Hull municipal buildings was in progress one point competitors had to decide for themselves was whether the present Town Hall should be retained or rebuilt. Messrs. RUSSELL & COOPER, whose design was selected, elected to rebuild, and those who chose the other course had apparently committed an initial error of judgment that put them at once out of court. Now there is strong opposition on the Hull Corporation Property Committee to the completion of Messrs. RUSSELL & COOPER's original scheme. This is the sort of thing that imports the gambling element into competitions.

IN *The Art Journal* for this month there is more than usual of architectural interest in the shape of illustrated articles on the "New Decorations in Bridgewater House" and on "Tewkesbury." The former deals with the decorative scheme carried out by Mr. ALEXANDER JAMIESON for the Earl of ELLESMERE. The work is so well illustrated that we may leave criticism to the readers. Tewkesbury is depicted by D. Y. CAMERON, A.R.S.A., and A. R. QUINTON.

DONCASTER is anticipating a speedy considerable increase of its population from the extension of its coal-mining industry, and with this in view an important and influential Congress has been held, with the Archbishop of York as the chief speaker, to urge the adoption of a scheme under the Housing and Town Planning Act to provide healthy and pleasant homes for the additional 200,000 people whom the Archbishop anticipated would, within the next five years, come to live in the neighbourhood of Doncaster.

The Connoisseur has an interesting article on the mediæval keys in Salisbury Museum, which, archaeologically, are of considerable value, as the dates can be fairly well fixed.

IN a letter to *The Guardian* a correspondent, over the signature "F. S. A.," utters some weighty truths on the subject of brass-rubbing, which we hope will be borne in mind by architectural students, who should never let their zeal for study lead them to damage the work of the past. We agree with the writer when he says, "Rubbing



WAKEMAN'S HOUSE
RIPON · YORKS.

From a Drawing by "SANS PEUR."

"THE ARCHITECT" STUDENTS' SKETCHING AND
MEASURING CLUB.

The Wakenham's House, Ripon, is a very pleasing bit of domestic architecture, and was for many years the residence of Hugh Ripley, the last wakenham, i.e. watchman, of Ripon.

brasses does them no good, and rubbing them with untrained or unskilful hands may easily do them a great deal of harm, so much so that the guardians of many of the best brasses in England either refuse permission to rub them altogether; or restrict their permission. Furthermore, no one has any business to rub a brass at all without obtaining the permission of the guardian of the building in which the brass is fixed. Worst of all, experience shows that a considerable number of brass-rubbers use means that are most injurious for the purpose of attaching the paper to the stone or wall to which the brass is fixed. A book on English Church brasses, published this year, contains a most mischievous passage on the dodges which may be used for keeping the paper on a wall; drawing-pins, which are only condemned because they seldom find a hold, and a variety of adhesive materials, all of which would leave a stain, and many of which would damage the stone on which the brass lies. No one ought to be allowed to rub a brass who has not learned how to keep the paper steady on the surface without artificial aid; there are plenty of smooth horizontal and vertical surfaces available for practice."

THE Scottish Ecclesiological Society has recently held meetings of both its Edinburgh branch and its Glasgow branch to consider the draft of a petition to the Government on the present condition of the Chapel Royal at Stirling Castle. The petition set forth that the Chapel

was in a peculiar sense the Chapel Royal of Scotland, and dealt with its historical interest, pointing out that it was the site of a long series of previous buildings—the Chapels of St. Michael—and that it was rebuilt on a larger scale by King JAMES VI. in 1594; that though of no great artistic merit, the Chapel was a building of very considerable architectural interest as a specimen almost, if not quite, unique of Scottish ecclesiastical architecture in the period between the Reformation of 1560 and the acceptance of Episcopacy in 1610, and that if suitably repaired and decorated it would present an interior sufficiently spacious and noble to do no discredit either to the rank which the Chapel Royal should hold among Scottish sanctuaries or to the religion and patriotism of Scotland; that at present its condition was disgraceful; that it was desecrated to uses not merely secular but contemptuous, being employed partly as a store and partly as a resting-place and refreshment room for visitors; that this misuse of the Chapel was grossly irreverent and deeply pained the religious feelings of the petitioners and doubtless of many pious Scotsmen besides them; that its whole condition could not fail to convey to the numerous strangers from other countries a bad and unjust impression of Scottish reverence for the House of God and for the monuments of her history; and most from the point of view of the place this building held in the history of Scottish architecture it was worthy of better treatment. The petition asks that some order may be taken for bringing its secular employment to an end, for the removal of the floor and partitions with which it is disfigured, and for some seemly redecoration, and the putting of it into such condition that Divine service may again be celebrated within its walls, and, if possible, that it may be regularly used for worship. It is reason for congratulation to know that nowadays the British public takes an interest in the relics of the past, and that the appointment of Royal Commissions on Ancient Monuments reflects the national thought.

PETROL AIR-GAS.

THEORY AND PRACTICE OF THE NEW ILLUMINANT.

By PROFESSOR C. A. M. SMITH, M.Sc.

APPENDIX: FURTHER NOTES ON CHOICE OF PLANT.*

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SINCE the previous articles on this subject were written, several correspondents have sent details of various plants; many of these are manufactured in provincial centres, and it was not possible to inspect and test the numerous apparatus on the market. Since some misapprehension seems to exist, it may be advisable to say that in May 1910 all of the firms connected with the manufacture of petrol air-gas known to the writer—in many cases these firms were discovered after a great deal of trouble—were communicated with, and many of them gave every facility for inspection. Certain types were selected for test and exhibit at a lecture on the subject. The articles were then written, and publication commenced in this journal on October 7, 1910. As each section appeared, correspondents kindly drew the writer's attention to new plants. Among those firms who so communicated were the manufacturers of the County Plant. A short description of this apparatus appeared in this journal on December 2, 1910.

The arrangement and details of the plant promised well, and, but for great press of other research work, a personal inspection of the County petrol air-gas machine would have been made a few weeks ago. At the same time, it is only fair to point out that during the last two years there has been such a sudden rush on to the market of these new generating plants that it has been almost impossible to keep pace with the fresh arrivals. As the writer has already stated, it is quite probable that the majority are merely ephemeral—they have arisen, and

* The series of articles upon this subject appeared in our issues of September to December 1910.

will disappear like mushrooms. Unfortunately, the good plants have to fight against the prejudice caused by systems ill-devised and unsound. However, a few days ago the works of the County Lighting Company were visited, and some rough tests and a careful inspection of the plants in course of construction were made. As a result it is considered that the apparatus calls for additional comment.

Everyone is human enough to be pleased after he has pointed out details in engineering work which seem to him to be defective to notice such things remedied. It is therefore a pleasure to state that the plants inspected impressed the writer most favourably, and the following were the reasons:—

Technical Knowledge.

A fact which must have impressed the technical man who has looked into this matter must be that many of those engaged upon the manufacture of plants are not scientific men, and do not give evidence of any full knowledge of the elementary principles underlying their operation. In this respect the County people presented an agreeable surprise. Not only have they a staff well trained in science, but they apply their knowledge and the spirit of their training to their work. They appear to have made numerous small researches, and they evidently believe that the way to make sure that a sound job has been produced is to test it well before sending it out to a customer.

It is very easy to discover in the course of a few minutes' conversation whether a man knows his subject or is "bluffing," to use an Americanism which will possibly be pardoned because of its aptness. Now, a number of the people in this new industry seem to favour the methods expressed by the American word. Examples quoted from catalogues have already shown that fact clearly. In the excitement of private conversation people who possess patents will make wonderful statements which they will not put into cold print. The representatives of the County plant were perfectly frank. They knew the subject; they believed in petrol air-gas. Of course they said that their plant was the best on the market—every maker says that. But they differed from some makers in that they gave definite reasons for their belief.

Although a short description of the plant has already appeared in this journal, we think that a closer inspection has revealed certain points none too clear from descriptions; it is therefore proposed to sketch out the general features and generally comment upon the apparatus.

The County Plant.

The apparatus is of simple construction, but when examined closely and critically, it indicates considerable foresight and scientific attention to details. In general, the machine consists of two copper gas reservoirs, arranged as bell-shaped vessels standing in water-seals. One is about three times the capacity of the other, and acts as gas-holder and carburettor combined. The smaller acts as air-pump, being made of sufficient weight to give the necessary pressure. At the side of the air-pumping arrangement a small pump is placed, the stroke of which is adjusted so that the exact quantity of spirit necessary to carburet the volume of air delivered per stroke is supplied with it. We are convinced that the device is such as to ensure absolutely constant mixture. The necessary power is supplied by falling weights, and a cycle of operations is as follows: As soon as the gas-holder falls to a certain point, a catch is released which starts the machine working. The air-pump is lifted to the top of its stroke, a positively opened valve allowing it to become filled with air. At the same time the petrol-pump sucks in the requisite quantity of petrol. At the top of its stroke an ingenious ratchet and tappet motion stops the action of the weights and at the same time releases the air-drum. The inlet valve is closed by a spring, and the drum falls by its own weight, pumping the petrol into a spiral carburettor and causing the air to pass over it and evaporate it. As already indi-

cated, the carburettor is arranged on the surface of the water in the main gas-holder, the petrol floating on its surface, and the air being compelled to pass over it in a spiral path until it enters the gas-holder, from which it passes to the supply.

An illustration and description of details have already appeared on p. 362, issue December 2, 1910.

The gas made by this machine contains about 6 per cent. or more of petrol vapour, having a calorific value approximating to that of coal-gas. It is claimed for this mixture, with we think good reasoning, that—

1. In case of leakage it is no more dangerous than coal-gas (a negligible quantity).

2. There is no possibility of firing back into the gas-holder (a remote contingency, but a possibility if the gauzes are left off with gas containing $1\frac{1}{2}$ to $2\frac{1}{2}$ per cent. of vapour).

3. Less power is required to drive a rich mixture machine, the volume of gas dealt with being less.

The fact that this machine draws its supply from outside the building is an undoubted advantage from a fire danger point of view.

In conclusion we may say that after an exhaustive examination and test we are convinced that this machine is entitled to be placed with the best of the many others we have seen and tested, and is one which can be confidently recommended to those looking for a safe and reliable means of lighting country houses or villages.

Fire Insurance.

It cannot be denied that a great deal of anxiety is present in the mind of the average non-technical prospective purchaser of a petrol air-gas plant on account of fire dangers. Petrol is now so well known as an explosive and inflammable agent that the very word spells caution, especially to the non-technical man.

The best court of appeal in such a question is one of the front rank fire insurance companies. The writer has before him a private copy of certain rules and regulations which have been drawn up for the guidance of the chief inspector of one of the largest offices with a large connection in this country and on the Continent. The following recommendations appear:—

It is insisted that any apparatus (except an acetylene gas portable apparatus holding a charge of not more than 2 lbs. of carbide) for generating, purifying, or enriching gas must be in the open or in a building used for such purposes, only not communicating directly with any building otherwise occupied. In the case of petrol air-gas a provision is made so that the plant may be placed in a building (used only for housing it) communicating directly or indirectly by openings protected by double fire-proof doors with any building otherwise occupied, provided the spirit feed-tank be placed and filled outside, in the open air, and the feed-pipe be provided with an outside shut-off valve. Any reserve spirit beyond that which is contained in the apparatus and feed-tank must be kept at least 30 feet from any other building occupied by the insured. It is added, however, that if the local authority grant a licence the spirit may be kept in the open or in a brick or iron compartment at a less distance than 30 feet.

There is no doubt that the insurance inspectors themselves are rather nervous about the plants. However, there is the proven fact that the leading insurance companies do not increase the premiums on houses in which petrol air-gas is used, always provided that the above conditions are fulfilled, and that the plant is considered reliable. There are, of course, machines on the market which are quite satisfactory from the fire insurance inspector's point of view.

The south transept of Selby Abbey is to be rebuilt at once at the expense of Mr. W. Liversidge, J.P., Selby, according to plans prepared by Mr. J. Oldrid Scott, F.S.A., architect. The transept was wrecked in 1690 through the fall of the upper part of the central tower. The work, which is estimated to cost 8,000l., will mark the final stage of the restoration scheme undertaken after the disastrous fire in October 1906. A prominent feature will be the south window, 36 feet by 15 feet, and containing six lights.

THE ARCHITECTURAL ASSOCIATION.

AN ordinary general meeting of the Architectural Association was held at Tufton Street, W., on Monday last, combined with a meeting of the Camera, Sketch, and Debate Club. The election of Mr. W. J. Allcorn, Mr. G. W. Capes, and Mr. H. G. Wicks was agreed to. Votes of thanks were passed to Mr. Andrew Oliver for presenting to the photographic collection a number of slides and negatives, and to Mr. Ernest Runtz for presenting to the Library thirty-two volumes of the *Revue Générale de l'Architecture*, by M. Cesar Daly. Mr. Arthur Keen, President, who was in the chair, announced that it was necessary there should be a much larger attendance of members at the recently-opened Life Class if it was to be continued after the present term. Mr. THEODORE FYFE then read his paper entitled

The Atelier versus the Builders' Yard.

It is with the greatest diffidence that I bring forward this subject, because I am fully aware that it demands the wisdom and experience of some one much more versed in building than myself; but I have thought it not out of place because we, of the younger generation of architects, must think clearly and reasonably about our art, and have an adequate basis of ordered process in our application of thought to building form, especially now that we are progressing so rapidly with systems of education in this country. The subject is one that is always with us. My first personal recollection of it dates from about 1898 or 1899, when Mr. Harry Wilson read a paper, followed by considerable discussion, at the Architectural Association. Then, as now, we had our Philip Webb and our Lethaby, and they have a considerable following in these times. On the other hand, we have had, for a much longer period, the great academic teaching of France, forming what I signify as the "atelier." Subsequent to 1898 there are only two utterances that I will draw attention to, though, of course, there have been many others. The first is a paper entitled "A Review of the Tendencies of the Modern School of Architecture," read before the Institute by Professor Pite in 1900, and the second is a very recent paper, "Architecture or Building," read at Birmingham by Mr. Schultz. I do not intend to refer to either at any length, but will take Mr. Schultz first. Referring to day-school training, he says: "I must say, quite frankly, that, in my opinion, this theoretic training is not going to make for good building; in fact, to be quite candid, I am not hopeful that a good general type of modern building will be seen until all we architects are abolished, swept away, root and branch." And then he goes on to say that the *craftsman* could, and should, be taught to do the architect's work in addition to, or as part of, his own. Further, he says, "meanwhile I would plead for a practical basis in the training of your youths. Send them first to do work and see work done, and to learn and know about the nature of materials and their putting together; teach them architecture as engineers are taught. Don't bother too much about design."

The first part of this quotation is quite too big a subject to discuss here. I would only say, what about the interregnum if architects are to be swept away? And, supposing that could be bridged, would we not find that our great modern buildings would of necessity fall into the hands of engineers, with craftsmen to work for them merely as superior decorators? I say "of necessity," because it is surely inconceivable that craftsmen could be entrusted to take up the problems of design, in its larger sense, involved in our great modern buildings. They might *contrive* fine bits here and there, even whole departments of a large building, which, when one thinks of it, is perceptible in a lot of old work; but one could surely get no great building, fine throughout, on such principles?

Now let us turn to Professor Pite's paper. He discusses precisely the same question, a possible revival of the crafts for all practical building needs; but he finds no solution therein. He admits that the minor or "decorative" building crafts are already on a sound footing, thanks to William Morris chiefly. "But" (here I quote him) "the major crafts of building construction are still outside the pale of their decorative sisters, and, indeed, are dependent on the master-architect's training, and upon his paper and pencil, for their usefulness or their beauty. We observe the signs of revivification in subsidiary cases; are there not prospects and hopes for the greater ones?" He sorrowfully admits not, and says later, in words which I would have you specially note: "The architect, whether he wills it or would have it otherwise, is compelled back upon himself and upon his own intuition and experience, for all discernment and

expression of the material and its craftsmanship. The architect at the present day is indeed the designer and master-craftsman. He goes backward to the status of the actual workman to bring his work forward to the point of true architecture."

I think we will all agree there can be no real building without precise and intimate knowledge, and I would further submit there can be no great building, that we call architecture, without a wide knowledge of tradition and example. The big man is not confused and crowded out in knowing all he can that assists his work, and in seeing all he can that has been done elsewhere. We can have no great national style without first having international experience. The only true receptivity is that of the large, healthy, creative mind. Recognising this, one feels it impossible to tie oneself down to either an atelier or a builder's yard. In the Paris Opera House, certainly one of the greatest buildings of modern times, we see the perfect flower of the system that produced great Prix de Rome men; we see a modern academic design, a design founded on the approved training of the schools in France; but we see much more than this, nothing less than a great building that any builder, properly so called, who loves his craft, would joyfully participate in; and we see a thing beautiful as an organic whole, within and without, the marvellous creation of a truly great architect. The academic and the practical must co-operate to produce such a building as this.

In any consideration of this subject one is bound to come full tilt against old work. Its claims are always sufficiently in evidence, and need no apology. It is right thinking about it in the mind of the student that is essential. On the one hand, he must recognise that we have lost tradition in the sense that the great mediæval builders had it. Nothing could have produced such great works as the west front of Rheims except a religion that was childlike in its trust and firm faith—we dare not believe anything else—and an instinctive hold on tradition. Perhaps it is because we have lost both, in the sense of the earlier builders, that we are utterly unable to clearly comprehend how their greatest works were raised, and flounder about between the one-man theory and the theory of the many workers, more or less inspired. We know that we find it supremely difficult, if not impossible, to do similar work that has the same extraordinary homogeneity and singleness of tone. So the student should realise what tradition means and his own relationship to it. On the other hand, he must recognise that the needs of his time demand of him a training in the most frankly intelligent criticism of the whole modern outlook, a criticism which leads to the appreciation of what he has been trained to regard as the *best*. He must realise that his achievement is a thing of thought based on a principle of selection as thorough as it is ruthless; thorough, because he must have principles, the more the better; ruthless, because there is a mass of undesirable opinion hanging about the whole game, something which clouds the issue, losing many a man in shallows, uncertainties, and weak work.

To say about a method of doing something, "This won't be satisfactory; it was done at So-and-so, and was bad," may sound pedantic, but it is in the right spirit. This is the true liberalism of art, which can advance, not because it despises, but because it fears and knows; not contempt, but knowledge, is what we want.

The mass of undesirable opinion before referred to hangs particularly about the subject of old work. Those who make a fetish of it because it is old work are largely responsible for this. Setting one's face against such an attitude does not necessarily mean that the student is a foolish iconoclast. It is only ignorance that is abusive.

But, you will ask, what is the training that will enable the student to appreciate only the best, and of what does the best consist? Now, here, I think, is the value of the atelier; for it is only, it seems to me, by some such system as the atelier that we are able to find an answer to this most important question. It is through lack of real, systematic, profitable training in design that most of the educational systems in this country suffer—not so much in design, perhaps, as in principles that *govern* design. An architect, I submit, must most emphatically be trained in certain aspects of the theory of his art, just as certainly as the musician. The two arts run parallel, and are very similar in this respect. The gain to the student is immense when one can point out the world that lies before him if he is able to recognise that certain proportions and rules—which are at least as old as the Greeks—are discoverable in all great buildings.

To the free and elastic mind this will not become a

fetish; far from it: it will recognise the limitations of all rules; but, on the other hand, it will gain immensely in stimulus by adding, bit to bit, and will advance thus by real experience. The old weapon, having served its day, will form part of the armoury if it is sound, and be thrown away if it is bad, and a newer and better one will take its place. Here, again, ought to be progress.

The study of *structure* is something which appears to be more intensely modern than any other aspect of the question; but is it so very modern after all? Here is our "builder's yard," but much more. On the one hand, it is all that old work can teach us, as material evidenced in architecture; and, on the other, it is the engineer's table, the plumber's shop, the mason's yard, the multitudinous crafts that appear in a really great building. It is just this about the Paris-Opera House that fascinates. This is the ideal, but how seldom achieved! And now, when I speak about the "builder's yard," it is perhaps hardly necessary to explain that I mean by it the extreme that it represents—the view that the young architect must learn to handle tools himself before he can build aright; that he must be a plumber, or mason, or carpenter, and, if possible, all of them, in some measure, if he is to have that intimate knowledge of material that alone produces good work. Here I will state my own position. I recognise that the architect needs this intimate knowledge, this subtlety of appreciation in material; the knowledge that can enable one man to build a beautiful gable in brick, while another, with exactly the same bricks and exactly even the same form of gable, produces something which is quite ordinary. But where I demur is in believing that architecture is only this, and that there is not another, and larger, side. To do the exponents of the "builder's yard" justice, it is only the narrower among them who really believe the contrary, or act as if they did. It is this pernicious hatred of the Renaissance, and of all that people are pleased to call sham building (which in some form or other is as old as any building that ever was), this one-legged theory that the column and the order are a damned thing, that is responsible for half the mischief. All building is surely part of one great craft, the greatest constructive craft there is, whether it be evidenced in a Surrey cottage or in Westminster Cathedral: the one is but the other in little. Thought, care, selection, and trained experience are requisite for both, though the relationship of parts to the whole is somewhat different in each. It is at this point that we appreciate the fascination of Professor Lethaby's remark, quoted in Mr. Schultz's paper, already mentioned. "Design," he says, "is merely contrivance, the doing of work in an ordinary way, just like cooking." On the other hand, has not Professor Lethaby been lately much occupied with the principles that underlie Greek building?

(To be concluded.)

LEICESTER BOARD OF GUARDIANS v. TROLLOPE.

A CASE relating to the responsibility of architects was begun on Monday last, before Mr. Justice Channell, in the King's Bench Division. It was an action for alleged negligence brought by the Leicester Board of Guardians against Mr. John E. Trollope, surviving partner of the firm of Giles, Gough & Trollope.

Mr. Hugo Young, K.C., who appeared for the plaintiffs, said that this action was brought against Mr. Trollope as the surviving partner of the firm who were the architects for a very large infirmary built by the Leicester Board of Guardians. It was discovered that there was very serious dry-rot in the building, so much so, indeed, that 2,000*l.* or 3,000*l.* had been spent in taking up the floor. By the time the discovery was made it was too late to recover from the builders, who had got their final certificate. The building was begun in September, 1902. It was completed in 1905, and the final certificate was given to the builders in 1906. In the infirmary were four large blocks of two wards each, and also a large administration block. It was not until February 1908 that anything wrong was discovered.

When the subject was investigated, counsel continued, it was discovered that instead of there being beneath the floor a layer of concrete 4 inches thick, and the joists laid on this and bedded round with a finer concrete for 2 inches, all over this building the builders had taken wooden pegs (thousands of them), driven these pegs into the ground, and, having thus got a level plane, had nailed the joists to the top of these

pegs and filled in the concrete at one operation. A direct communication with the ground was left through these pegs. Each peg acted as a pipe for drawing up moisture, and the system destroyed the whole purpose for which the concrete was laid down.

Mr. Young then handed specimens of the dry-rot fungus and concrete to the judge.

His Lordship: I hope the rot will not communicate itself to the woodwork of the court. We have already had arbitration regarding this building.

Continuing, counsel said the flooring got into such a state that it had to be taken up. The plaintiffs did not attribute, Mr. Young said, any want of good faith to defendant and his firm. They had placed too much faith in other people.

As to the position of the clerk of works, Mr. Young read from one of the documents in the case that it had been agreed that the clerk of works was to be merely the inspector and assistant of the architect.

The hearing was adjourned.

On the resumption on Tuesday,

Mr. Pollock, K.C., submitted that the defendant was not liable. The work was not done in accordance with the specifications through the complicity of the clerk of works and the builder. By their acting in this manner there was a saving of cost of about 422*l.* The architects were lulled into security because throughout the time the work was going on the clerk of works appeared to fulfil his duties, and made a number of complaints regarding various matters. As to the alleged undertaking on the part of Mr. Trollope to bear the cost of putting matters right, he submitted that it was made without prejudice and without knowledge of the extent of the harm.

Mr. Trollope, the defendant, said that the clerk of works was appointed to see that the specifications were carried out.

Cross-examined by Mr. Hugo Young, witness said that in his view he might assume that the whole of the plans and specifications were being carried out unless his attention were drawn to something special.

And, suggested counsel, it is not any part of your duty to supervise the clerk of works?—Certainly; general supervision, to see that the scheme is carried out.

Is it not part of your duty to see that proper timber is used, for instance?—It is my duty to have a look round.

Is it any part of your duty, if the clerk of works tells you the timber is sound, to see whether it is or is not?—Yes.

If he tells you the concrete is properly laid, is it any part of your duty to see whether he is truthful or not?—No; he is there to see the concrete is the proper depth.

What is the difference between the concrete and the wood?—One is mixed and the other is natural. We cannot be there to see every yard of concrete mixed.

Might you not say, "Leave a portion of this open, that I may see it is properly laid"?—You might do that if there was suspicion of fraud.

The Judge: It would be equally easy for the other man to make that portion all right.

May I take it that from first to last you never made the slightest effort to test whether this important matter of flooring was being properly done?—I took it for granted it was being properly done.

You never made the slightest attempt to check it?—No.

Did you ever appoint anyone beyond the quantity surveyor and the clerk of works to test any portion of this to see whether your plans were being carried out?—No.

Do you really suggest that in concrete laying, and the laying of floors where dryness is so essential, that it is not the duty of the architect to see that his design is properly carried out?—Not with a proper clerk of works.

It is not usual to check clerks of works?—No.

Then, according to your judgment, the person who is responsible for the plans being carried out is the clerk of works?—Yes, in detail.

But you don't call an acre of this concrete being laid with pegs a matter of detail?—No.

If it was not your duty to see in detail what was being done, was it not your duty to see your principles were being carried out?—I don't think so.

Did it occur to you the clerk of works might misunderstand what you wanted?—He could not misunderstand from the drawings and description.

So far as the clerk of works is concerned, you do not suggest he was not a fit and proper person to appoint?—I do now.

If you had chosen to check him, instead of relying on him, you could have prevented all this injury?—Yes; but there was no reason why I should have checked him.

You got 5,000*l.* out of it?—Yes; it was not a full fee, I know.

The Judge: I don't think the amount this gentleman got out of it has anything to do with the question.

Mr. E. T. Hall, F.R.I.B.A., gave expert evidence as to the relative duties of architect and clerk of works. The duty of an architect was, he said, to see that the general scheme of design was carried out, that in bulk the materials were such as were fit and proper to be used, and that the works should all co-ordinate to give effect to the building design. The clerk of works, on the other hand, should see that the detailed method of construction specified by the architect was carried out. It would be physically impossible, added the witness, for the architect to see one fiftieth part of what is in the building.

Cross-examined, witness said it was impossible, for instance, for an architect to see that all the walls in the building should be of specified thickness and built as specified. Unless an architect were constantly on the building, he must rely on the clerk of works.

Do you suggest, said Mr. Hugo Young, that it is not right for the architect to ask whether they are carrying out his idea about the concrete?—That is not what occurs between an architect and a clerk of works. The architect assumes his ideas are being carried out unless something occurs which leads him to think they are not. "You assume the thing is being done and superficially you examine it," added the witness a minute later.

If he had looked at this work, would he not have seen the pegs?—No, because there would be fillets at the top.

Four inches of concrete had to be laid before the fillets. If he had examined it at that stage, would he have seen this acre of pegs?—There was no acre of pegs. The pegs were laid in rooms. If he had visited it at the time, of course he would have seen the pegs, but it is only the architect's duty to see that superficially things are as he expects.

If nothing strikes his eye, he is not bound to make investigation?—No; it is physically impossible to test things in the way you suggest.

So that, granted a fool or a fraudulent clerk of works, I, as building owner, get no security by paying the architect one and a quarter per cent. for supervision?—You get the architect's general knowledge of men. He would discover if the clerk of works were a fool.

But the building owner gets no security against the clerk of works and the builder putting their heads together?—I don't think you can ever prevent fraud.

Mr. C. F. Doll, F.R.I.B.A., an architect, of Bloomsbury, said he went down to examine the Edington building on November 14 last. The driving in of the pegs would not show that the work was being done wrongly, as pegs had to be used to get the level. In the opinion of the witness the superintendence of the architect consisted in seeing that the work and drawings as regarded dimensions and architectural features were properly carried out. The architect selected the samples of material and sent them to the clerk of works, whose duty it was to see that the material delivered conformed to the sample. The clerk of the works had to see that all details were properly carried out, and it would be perfectly impossible for the architect to see that the concrete was properly gauged and laid.

What do you estimate the builders saved by their method of laying the floor?—About 400%.

Cross-examined by Mr. Young: Therefore the architect has certified for 400% work more than he ought to have done?—The builder has got 400% more than he ought to have got.

His lordship said he was sorry to have to give judgment against the defendant in regard to a matter in which he was not greatly in default, and in regard to which the plaintiffs had said they made no imputation against him. He had been much impressed with the way in which the defendant had given his evidence. The facts were extremely clear. There was nothing in the contract which differed from the ordinary building contract, and it contemplated the appointment of a clerk of works, who was to assist the architect, the position of such a clerk being one which was well understood. The only special thing about the contract was that the architect was to take substantially less fees than usual. He could not, his lordship continued, help seeing that the dry rot was brought about by collusion between the clerk of works and the builder, though it seemed to him that the builder would not be entitled to rely on the certificate given him by the defendant. The witnesses had agreed that in matters of detail the clerk of works had to see what the architect could not be expected to see. The architect knew, however, that this flooring was a very important matter, and

that he must see that it was done properly. If the defendant had taken steps to see that the first block was done all right, and had left the rest to the clerk of works, that they were to be done in a similar manner, he would have had some doubt whether defendant was liable. He did not think that the excuse of the architect that he thought the clerk of works would see that the floor was all right was sufficient. It seemed to him that the laying of the floor was not a detail which could not justifiably be left to the clerk of works; it was a matter of design. He thought that on the agreement to put the matter right the plaintiffs would also have succeeded. He must repeat again that he was sorry to give judgment against the defendant, as he had behaved exceedingly well in the matter and had given his evidence in a very proper way. It was a very unfortunate thing for the defendant.

Counsel stated that the parties would endeavour to come to terms as to the amount so as to avoid the necessity for a reference. There would be liberty to apply to the Court if necessary.

Judgment was entered accordingly, with costs.

COMPETITION NEWS.

APPLEBY.—Plans by Mr. R. M. Rigg, Penrith, have been accepted, out of sixteen competitive designs, for a Post Office and a Conservative Club between the Market Hall and the High Wiend at Appleby, Cumberland. Premiums of 10% and 5% have been awarded respectively to Messrs. Garside & Pennington, of Castleford, and to Mr. R. P. Blackburn, Carlisle.

ISLE OF MAN.—The award has been published of the recent competition organised by the Douglas Town Council for designs for a pavilion and laying out the Villa Marina Estate with pleasure grounds, &c. Professor S. D. Adshead, the assessor, awarded the first premium of 200% to Messrs. Percy Robinson & W. A. Jones, of Albion Street, Leeds. Premiums of 100% each will go to Mr. S. Ramsey, of Herne Bay, and Messrs. J. Cocker & E. W. Hilton, of Altrincham, Cheshire.

NORTHAMPTON.—The Education Committee have decided to invite competitive designs for a secondary school for girls from architects practising in the borough and county. The designs are to be for a building that will accommodate 400 girls, but at the present time it is only proposed to erect buildings to accommodate 300 scholars. The designs will be required to show how the extension can be made when the additional room is wanted. An assessor is to be appointed.

ILLUSTRATIONS.

THE PICTURE HOUSE, NEW STREET, BIRMINGHAM.

THE cinematograph theatre known as "The Picture House" was opened in October last, the architects and surveyors were Messrs. NICOL & NICOL, of Birmingham, and Messrs. NAYLOR & SALE, of Derby, Mr. THOMAS JOHNSON being the builder.

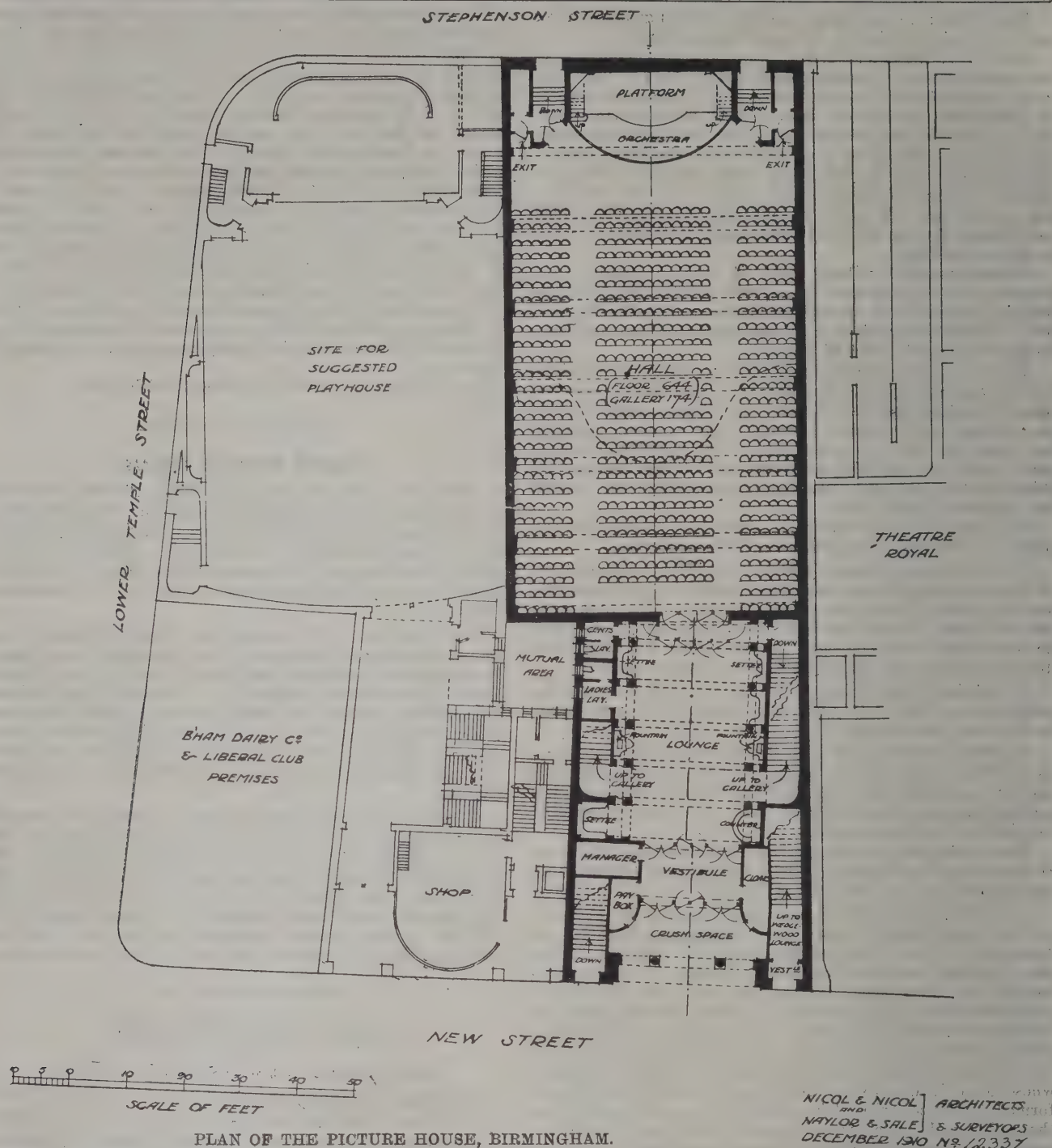
The theatre proper is provided with wide entrances and exits to two streets, and is about 100 feet by 50 feet, seating about 1,000 people, and a sloping floor with a balcony at one end.

It is a lofty hall with a segmental ceiling and a large semicircular recess in which is framed the picture screen.

The architectural treatment is an arcade with panels and groups of figure subjects combined with the architectural features. The ceiling is divided into panels with richly modelled ribs, and has a number of circular panels glazed with leaded lights, through which daylight or electric light can enter, under the complete control of the operator.

The decorations are carried out in fibrous plaster and colour. The theatre is entered through a spacious lounge with a colonnade of Doric columns on either side, from which spring a coved ceiling richly modelled and moulded; the niches between the columns are provided with groups of statuary over marble fountains, and settees surmounted by decorated panels, the floor being laid with marble with mosaic enrichments, and partly covered with a rich carpet.

On either side of this lounge ascend the two wide stair-



PLAN OF THE PICTURE HOUSE, BIRMINGHAM.

cases conducting to the balcony, which is fitted with more luxurious seats, and, as a higher price is charged in this part, all the appointments are correspondingly better finished.

The operating room is behind the balcony, and is considered the most up-to-date of its kind yet erected. It is completely cut off from the remainder of the theatre, and is provided with a concrete floor and ceiling and a separate scheme of ventilation. Adjoining the operating room is a special room for rewinding the films.

Over the principal entrance next New Street is placed the ladies' tea-room, which is a large apartment decorated with great refinement and finished in the Adams style, and blue and white plaques of "Wedgwood" character give the key-note for a scheme of colour which is carried into the furniture and every detail in the room. The elevation to New Street has been carried out in "Carrara" ware, in a design which expresses the character of the building. The principal feature of this façade is a large semicircular arch in which, considerably recessed, are placed the more important windows.

The pavilions supporting this arch include the entrances to the basement and upper parts of the building,

and are carried up well above the adjacent theatre in the form of towers.

The Carrara ware is relieved by inlays of green and gold tiles in patterns and bands.

The elevation to Stephenson Street is decorated in less costly materials, chiefly bricks, which are specially made and laid with a bold white joint, the architectural features being worked in cement. The heating and ventilating have been given special attention, the smoky air being extracted by powerful fans, and replaced by air which has been washed, heated, or cooled, as may be required, and distributed to every section of the building by mechanical means. The lighting generally is reflected from the ceiling, and produces a very pleasant and restful effect.

The interior decoration has been carried out from the designs of the architects by Messrs. MARTYN, of Cheltenham, and Messrs. HAMPTONS, of London.

The heating and ventilation is the work of Messrs. HADEN, of Trowbridge, and the stained and leaded glass that of Messrs. HARVEY & ASHBY, of Birmingham.

The St. George's Guild have executed the marble and ornamental cement work, and the electroliters were made by the Birmingham Guild of Handicrafts.

THE ILLUMINATING ENGINEERING SOCIETY.

THE LIGHTING OF LIBRARIES.

At a meeting held at the Royal Society of Arts on Monday, January 16, Professor S. P. Thompson, F.R.S. (President) in the chair, an important discussion on "The Lighting of Libraries" was held.

The PRESIDENT said they met under particularly agreeable circumstances that evening, as it was the first occasion upon which they had actually met in co-operation with another professional body of great distinction. They met in co-operation with the Library Association in order to discuss questions concerning the lighting of libraries and the proper rules for specifying the amount of illumination in libraries under different circumstances. The matter would be introduced in three short papers, after which certain statistical facts would be placed before the meeting which had been collected quite recently concerning the actual lighting of certain libraries.

Mr. L. STANLEY JAST (Honorary Secretary of the Library Association, Chief Librarian of the Croydon Public Libraries), read a short paper on "Library Lighting," as follows:—

There are really two problems of library lighting. The first is the problem of lighting rooms for purposes of reading and writing, which is of course in no way different from the lighting of banks, offices, and similar apartments. The second is the lighting of bookcases and of gangways between bookcases; this is the specific library problem, and the one which is by far the most difficult of solution.

Dealing with the general problem first, one may perhaps speak of two more or less distinct periods in the lighting of libraries. The earlier period is marked by general lighting, usually obtained from lights or clusters depending from the ceiling or roof, with little or no point or local lighting. The results have rarely been happy. The architect has only too often arranged his lights according to purely decorative or architectural considerations, without paying any regard to the position of readers and tables. Hence it was no uncommon thing to see a roof or the passages between tables brilliantly lit, while the tables themselves were left in comparative obscurity. The results obtained by this happy-go-lucky system—by no means unknown even now—were worse as a rule when the source of illumination was the electric lamp. The absolute necessity of obtaining light where it was wanted, whether there was any light anywhere else or not, brought about the second and present period, in which the emphasis seems to be laid on point lighting, with a comparative neglect of efficient general lighting.

Mr. Jast presumed that there can be no question as to the undesirability of point lighting in itself, more especially when it is the primary source of illumination, and not subordinated to a scheme of general lighting.

That being so, it appeared to him that point lighting should be avoided wherever possible, and he contended that it should and could have been avoided in many recent examples of library lighting. One rarely sees in this connection proper treatment of the walls of the apartment, so as to provide good reflecting surfaces, and so aiding not only in the thorough diffusion of the light, but effecting a considerable economy in the direct illuminating power. Excellent results have been attained in one magazine room by suspending unshaded electric incandescent lamps about one foot below the ceiling and colouring the walls cream; there are no table lights at all.

Where, as is the case in many reference libraries, the walls are utilised for shelving books, no reflecting surface other than the ceiling is, of course, available; even then, however, if the bookcases are not carried up to the full height of the walls, it would probably be worth while to utilise a space above the cases in this way.

It is clear, however, that in many, perhaps in most, reference libraries point lighting for the reading tables or desks will be a necessary evil. The question then arises as to whether suspended lights over or standards on the tables are to be preferred. If a standard is chosen, what is the best height above the table and design of standard; and, more important still, what is the best form of shade?

The only scientifically constructed shade is, presumably, the holophane; the objection to it for table lamps is that you have a bright light immediately above the eyes, not, of course, so accentuated as in the case of the unshaded lamp, but sufficiently annoying nevertheless. After trying several varieties of shade, the speaker preferred, on the whole, the ordinary cone-shaped opal shade, as deep as it is possible

to get it, so that the reader seated at the table is unable in any ordinary position to see any part of the lamp itself.

Now comes the special problem of library lighting, which appears to be sufficiently difficult to deserve all the attention and skill which the illuminating engineer can bring to its consideration.

The problem is, briefly, that of generally illuminating a narrow gangway between bookcases, of an average width of from 3 to 4 feet, and at the same time lighting two vertical walls of books, covering an average width of, say, 9 ft. 6 in. to 10 ft., with an average height from the floor of about 8 feet. Mr. Jast did not remember to have seen an absolutely satisfactory solution of this problem, and was inclined to doubt if an absolutely satisfactory solution is possible. On the whole, he believed that the best average results are achieved by lights over the centre of the gangway.

The alternative is to employ lights on the cases. In the Croydon Library linolite lamps are fitted on the cornices of the cases, so arranged that the lamp on one case lights the books on the opposite case. The result is fairly satisfactory, the main objection being that the lamp is fully visible to the eyes when examining the upper portion of the case. Fortunately one does not expect readers to do more at a case than read the titles of the books required; while the absence of fittings projecting from the tops of the cases is a distinct aesthetic gain.

Mr. Jast said that he did not know if any library had attempted to light bookcases by what is known as pattern 21 of the linolite, hung from a fitting projecting in front of the case; this pattern, he was informed, was used for lighting pictures.

It had been suggested that it might be practicable to carry up the cases so as to provide a certain amount of reflecting surface to aid in the diffusion of the light.

In order to properly light the lower halves of bookshelves he thought this should be done from below, in the same way that footlights were used for lighting the front portion of a stage. He would cut a longitudinal trough in the floor along the front of the bookshelves, at a suitable distance away, and cover it with glass of the necessary thickness, and in this trough place lamps with reflectors so arranged that the light would be thrown directly on the shelves. To prevent any light reaching the reader from below the trough might have an opaque lip on the edge furthest from the case. For economical and other reasons he would arrange for a bar to run the whole length of this trough, which, when the reader stood upon it, would switch on the light and automatically switch it off when the foot was removed. The lighting of the top of the shelves could be by ordinary centrally hung lamps or from bracket lamps projecting from the tops of the shelves. He also commented upon the lighting of the central reference library at Croydon, where there is an electrolier suspended from the roof. He said this form of lighting, which was designed purely from the decorative point of view, ought to be avoided, as it lighted the roof and nothing else. Many years ago at Croydon they ceased to use these electroliers, except for the centre lamp in each electrolier, and the tables were now lighted by standards, connected, he regretted to say, by flex drawn from the electroliers. It seemed to him that when corporations went in for electric lighting—at any rate at economical periods—they very often perpetrated systems which they would immediately condemn in any other buildings but their own.

By way of conclusion, Mr. Jast stated the points which occurred to him as those on which the opinion of illuminating experts would be valuable:—

1. Is it desirable to do away with point lighting as far as possible, relying wholly or mainly on well-diffused general lighting?

2. How far should wall surfaces be employed as an agent of diffusion?

3. If tables are lighted locally, which is the most satisfactory form of shade?

4. What is the best solution of the specific library problem of lighting bookcases, especially when these are divided by narrow gangways?

Mr. J. DUFF BROWN (Borough Librarian, Islington) read a paper entitled "The Artificial Lighting of Libraries," which dealt with certain problems and difficulties in the artificial lighting of libraries which have been observed by different librarians, whose solution could be discussed and perhaps suggested by the practical experts present at this meeting.

Like the ventilation of public buildings, their lighting has always been a contentious subject, but after reading

much and observing more, his own personal feeling was in favour of getting as near to Nature as possible. For that reason a plain open window and a light as nearly like daylight as can be obtained seemed to be ideal conditions. In many cases, however, it appears to be impossible to get anything near to natural conditions, owing to the fads or mistakes of architects and hot-water, ventilating, and electrical engineers. These specialists are nearly always in conflict, and as each has special requirements, every public building is the victim of a series of compromises and modifications which do not invariably yield satisfactory results. As regards libraries, these conflicting factors affect the artificial lighting in a number of ways, and each department somewhat differently. He proposed, in dealing with these separate departments, to assume that only electric light is contemplated, that being the most mobile, clean, and effective light for library purposes.

He thought it quite possible to obtain a perfect artificial system of illumination in any building, provided the occupier is prepared to pay for it, but the human tendency to economise on the wrong things prevents this happy condition from being often obtained. Economy with regard to expenditure on lighting is compulsory as far as municipal libraries are concerned, owing to straitened means, and in a good number of cases this is the reason why many municipal library reading-rooms are badly lighted. Another reason is the fact that the lights have been arranged as symmetrically as possible to match the architect's ceiling panelling or other decorative whimsies, and the result is, in many cases, that while a pleasing design is obtained, it is only effective during daylight, because, as night advances, the room is only illuminated by certain points of light, generally in the wrong places.

To deal first with the reference department. The problem here is how to light reading-rooms arranged for different systems of administration and fitted with alcove or ordinary wall shelving. The lighting for a reference library in which readers are allowed access to the shelves must be arranged so that the bookshelves will be as well lighted as the reading-tables, and it is necessary to light the books so that their titles can be easily read, and to avoid the shadows of the readers being cast over the shelves. This raises the question of local *versus* general lighting, on which considerable difference of opinion exists.

In reference departments where access to the books by readers is not permitted, the question of lighting the book-cases or stacks is quite a minor point, and only the reading-tables need be thoroughly well lighted. In general, where readers are not allowed access to the shelves, the books are arranged in stacks behind barriers and not round the walls in alcove or other forms. The problem in the reference department, then, is, first, how to illuminate reading-tables effectively, whilst, also, in the case of open-access bookshelves, making the titles of the books and the classification guides perfectly clear to readers.

In newsrooms or general reading-rooms the main problem is how to light newspapers spread out on sloping reading-stands, either arranged against the walls or standing across the room at right angles to the walls. If the lighting is arranged for each stand independently, it means that the fittings become fixtures, a disadvantage always associated with wiring which has to be conveyed along the floor and attached to tables or stands. For this reason his own preference was in favour of having the lights hanging from the ceiling, independently of furniture, so as to obtain complete adjustability whenever required. There is hardly any library in existence which has not at some time rearranged its fittings and furniture, and it is often difficult to make alterations without overhauling the whole of the lighting apparatus.

In lending departments arranged for indicator charging it is necessary to have the indicator itself and the counter thoroughly well illuminated on both sides, and it has occurred to me on several occasions that a long tubular light, arranged close to the indicators on the upper margins, so as to illuminate downwards, would be an improvement on any overhead system which casts the shadow of the borrowers over the numbers. This method has been tried in libraries where the readers are permitted direct access to the shelves, and it is claimed that the arrangement prevents shadows from being cast on the books. It is doubtful, however, if the lower shelves are as well lighted as the upper ones. Where readers are not permitted to have access to the bookshelves the ordinary hanging lamps are quite sufficient, provided there is nothing in the construction of the bookcases to obstruct the light.

The lighting of other departments is very much the same

as in the three main departments dealt with, and the only other point remaining to be mentioned is the lighting of the exterior of the building, which, from the point of view of advertising the existence of a library, should be made more effective than it is in most cases. After nightfall, in a large city, the most conspicuous public buildings are theatres, music-halls, and taverns, and that is so because some effort is made to illuminate them outside. Most public libraries, and particularly those which have no reading-rooms at the front, often look as dark and dull as if they were uninhabited.

The chief problems of library lighting may be summarised as follows:—

1. To light reading-room tables so as to avoid glare in the eyes of readers.

2. To prevent the casting of strong single or multiple shadows of any kind.

3. To avoid fixing furniture or fittings in permanent positions; and

4. To ensure the illumination of the room generally, as well as the tables.

5. In open-access lending or reference libraries the illumination of the bookshelves should be arranged so as to avoid as much as possible the shadows of readers falling on the books, and also to ensure the lighting of the lower shelves.

To obtain these various results it appears to me that, whatever kind of illumination is used, it is necessary in most cases to adopt general lighting, reinforced at all weak points by local lighting.

Mr. JOHN DARCH read a paper on the same subject. He took the municipal or popular library as the typical subject for consideration, although his remarks would be equally applicable to either of the various special or other libraries—the principles involved being in all cases the same, the details varying from those of the municipal library only so far as necessary to meet special requirements.

The more one thinks upon the subject the stronger becomes the conviction of the need for a complete and perfect system of illumination in every public library. Continuous reading is a great strain and renders the eyes very sensitive to perverse influences, and, therefore, every possible provision should be made for the needs and comfort of the reader. But what are the facts? There was not, to his knowledge, a library in London, if in England, however luxurious it may be in other respects, that is provided with satisfactory lighting arrangements, most of them being illuminated in a manner that would answer equally well for a warehouse or a restaurant. We all know and approve the plea for public libraries—the age demands them—but where is the wisdom in providing books without adequate and safe means of reading them.

Experience of library building and fitting leads one to the conclusion that there is no alternative but legislation. If an Act of Parliament has been found necessary for factory lighting it is clearly no less necessary for the public library, the owners or controllers of which should be compelled to provide sufficient and satisfactory illumination or to close the library as a public nuisance.

Speaking to librarians, who are always beset by the difficulties of finance, and who look upon the ideal with the sad feeling that it is also the unattainable, and therefore not within the realms of discussion, he wished to maintain that the ideal *must* be the goal, and that in matters of public health it is false economy to stop short of it. Be as frugal and judicious as possible in our expenditure upon the less essential features, but not in this.

The first principle of library lighting to be emphasised is that there must be a general lighting of the reading-rooms, distinct from and in addition to, the local lighting of the desks, &c. To rely upon general lighting alone, as is done in perhaps the majority of libraries, is a great mistake, being both a useless waste of light and a failure as far as reading utility is concerned.

For general lighting it is not necessary to have more candle-power than will be required to see about the room—0.75 foot-candle should be ample—and it should be soft and well diffused; which it would be if the light were derived largely from the illuminated walls and ceilings.

If the room is lofty there is nothing better or more economical than an arc lamp, or, better still, a regenerative gas or Wenham ventilating lamp, provided they are well above the sight line. Whatever lamps are used they should be placed only just far enough below the ceiling to avoid dark shadow contrasts thereon and to admit of its being well illuminated.

The worst general lighting is that which is most common,

yet which has been specially recommended by a library expert, viz., plain opal shade pendants at equal distances apart, and about 8 ft. 6 in. from the floor. In this arrangement the ceilings and upper half of the walls are placed in gloom, and yet, go where you will, you cannot avoid the glare of one or more of the lights; such an arrangement is at the same time wasteful of light and inadequate for reading. He disapproved of downward or other reflectors in general lighting, particularly the polished kind, which reflect in spots and streaks; a room is better lighted when ceilings and walls are permitted to do the reflecting.

For low ceilings the lamps should be placed as high as the proper illumination of the ceiling will admit, and the

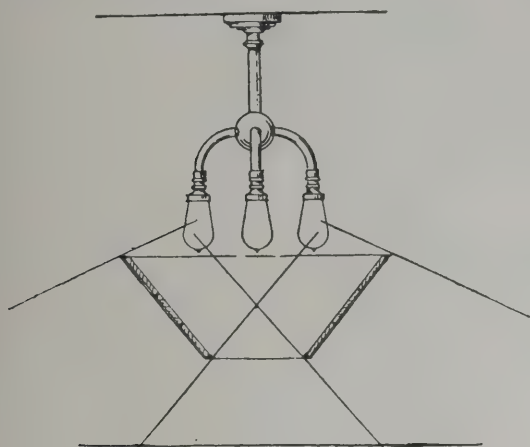


FIG. 1.

direct light kept from the eyes by means of opaque or semi-opaque screens, in which case the lamps should not be enclosed in obscured glass. The form of these screens will depend upon circumstances, but fig. 1 is a suggestion for an average case, and may cover an arc lamp, filament lamp, incandescent gas, or a regenerative burner. By this means good general illumination may be obtained without the lights being seen. Indirect lighting is also specially suited to low ceilings, in which inverted arc lamps may be used, or ordinary bracket lights, screened from the eye level, yet arranged to illuminate the ceiling and walls, and which will give a pleasing and sufficient general light. This method of treatment is more fully explained under the head of the "Art of Shading" in *The Illuminating Engineer* of February and March, 1909.

(To be continued.)

UNIVERSITY OF LONDON LECTURES ON ARCHITECTURE.

At the British Museum on Tuesday, the subjects dealt with by Mr. Banister Fletcher were the Circular Temples and Basilicas of the Romans, both of which are of particular interest to us to-day, since the circular temple was the prototype of the early Christian baptisteries of the fourth century, and the basilica the model from which almost every Christian church and Gothic cathedral was evolved.

The worship of the goddess Vesta in Rome is of the greatest antiquity, and is supposed to have been founded by Numa the legendary second king of Rome after Romulus. Her temples were always circular on plan, symbolising the family hearth with the fire in the centre, similar, it is believed, to the Greek Prytaneum, in which the sacred fire was always carefully guarded; the origin from prehistoric times no doubt being a desire to have in every village and city one fire always burning, from which the villagers might kindle their own hearths, for, before the use of flint and steel, fire could only be obtained by the laborious process of a wooden drill, a custom still in use among certain savage tribes.

This primitive custom was resorted to with great pomp and ceremony in the event of the fire in the temple dying out, and was continued for some time after the easier methods were in common use.

Numa is said to have transferred the cult from Alba Longa to Rome, and to have instituted four vestal virgins to tend the sacred shrine. Later the number of vestals was augmented to six. These were chosen by the Senate, the office being much sought after as one conferring the highest

possible honours. The candidate had to be over six years of age and under ten. Her vows lasted for thirty years, the first ten being spent in learning her duties, the second in performing them, and the third in instructing the younger vestals.

The priestess of Vesta enjoyed many privileges and advantages, amongst others the seat of honour beside the Empress at the circus, theatre, or amphitheatre, the exceptional privilege of riding in a wheeled carriage, and the power of pardoning a prisoner condemned to death should she meet him by accident on his way to execution. On the other hand any negligence of her duties was severely punished, for she was scourged if she allowed the fire to go out, the relighting of which was performed by the Pontifex Maximus in the manner already described, or by means of a burning glass, or concave mirror in later times.

Once a year the fire was solemnly extinguished on March 1, and rekindled by the Pontifex. A similar custom, probably a survival of this pagan rite, still exists in the Church of Rome to-day, when on Holy Saturday, all lights having previously been extinguished, the priest kindles fire by means of a flint, and proceeds to light the Pascal candle.

The Temple of Vesta was destroyed by fire four times, the last time being in 191 A.D., after which it was rebuilt by Severus. The existing podium of concrete, about 10 feet high, belongs to the earlier structures, the foundation of the steps even possibly to the original temple. The circular temple had a peristyle of eighteen columns of the Corinthian Order. The frieze was ornamented with ox skulls and sacrificial ornaments, and the ceiling of the peristyle was coffered.

It is usually held that these circular temples, and those of the Greeks had, as it were, two roofs, the dome of the cella being slightly above the level of the peristyle roof, though a coin of the time of Vespasian, probably struck to commemorate the restoration of the Temple of Vesta after the great fire in Nero's reign clearly shows one dome covering alike peristyle and cella.

The Temple of Mater Matuta and the little Temple of Vesta at Tivoli were mentioned, the capitals of the latter having been copied by Sir John Soane in the Bank of England.

The Pantheon was built upon the site of a former nymphæum, a place for plants, flowers, and running water. In front of the nymphæum was a temple built by Agrippa during the reign of Augustus in the year 27 B.C. This temple was of the Etruscan type, having three cellæ, as seen by the spacing of the columns of its decastyle portico.

In the year 120 A.D., Hadrian built the Pantheon over the nymphæum, using the portico of the Etruscan temple, making it face north instead of south, also converting it into an octastyle instead of a decastyle structure, thus accounting for the steeper slope of the pediment, and the want of verticality in the consoles of the raking cornice. For many years the inscription in the frieze bearing Agrippa's name was most misleading, and it was not until the investigations made by M. Chedanne in 1892, when amongst other discoveries he found bricks stamped with the name of a brickmaker of Hadrian's time, that the real date of the building was known. It was thought at one time to have belonged to the Thermæ of Agrippa, but as no hypocausts were found under its floors, and no openings or means of communication with the baths could be traced in its concrete walls at the back of the building, this theory was abandoned.

The columns of the portico are monoliths of granite (the earliest existing examples of granite columns in Rome); they are consequently unfluted, but have Corinthian capitals of Pentelic marble. The columns are 46 feet in height, having a diameter of 5 feet at the base.

The Greeks were averse to the use of the monolithic shaft, with rare exceptions, as it was more liable to split; they preferred to build up their columns in drums in order that the stone might lie the right way of the grain; but the monolith found great favour with the Romans. The portico measures 110 feet across by 55 feet, and has three columns in its depth. The Temple probably derived its name from its dedication to the various deities of the Gens Julia, or it is thought from its resemblance to the Vault of Heaven.

We owe its present preservation to the fact that the tyrant Phocas presented the building to Pope Boniface IV., who consecrated it as a church under the title of S. Maria ad Martyres.

The temple is circular on plan, its walls of concrete being 20 feet thick; there are eight recesses in the thickness of the wall, one forming the entrance. Three are semicircular and the remaining four are rectangular. Between the eight recesses are smaller semi-circular chambers with openings in



GRAINGER'S PORCH
ELY

From a Drawing by "SANS PEUR."

"THE ARCHITECT" STUDENTS' SKETCHING AND MEASURING CLUB.

This shows Grainger's Porch, Ely, being an entrance from the High Street into the Cathedral Close. The beams are all of oak, richly carved, with the coat of arms of the monastery painted on one of them. Seen on a sunny day, the russet-coloured tiles and deep shadows produce a truly picturesque effect.

the outer wall; probably these chambers are in order to lessen the weight of the wall, and also to admit the air to help the setting of the concrete; they occur on the ground level and high up. The building is 142 feet 6 inches in diameter, and measures the same from the floor to the top of the dome. The floor, which is paved with slabs and roundels of porphyry, rosso and giallo antico, &c., is slightly convex in order to avoid a hollow appearance in the centre.

In 1892 owing to cracks in the vault, M. Chedanne removed some of the stucco, and investigations proved the vault to be constructed of bricks, laid almost horizontally, sloping slightly outwards. Relieving arches of considerable dimensions and vertical piers were found in the lower portion of the dome, carrying the weight downwards. Externally this lower portion was stepped in order to prevent any tendency to push outwards. Five rows of coffers considerably lessen the weight of the dome; these lacunaria differ at the top and bottom, being larger at the bottom, in order to rectify any optical illusion, and appear to be square from below. Gilded bronze flowers were formerly attached to each sinking. At the point where the coffering ceases the dome measures 80 feet across.

The whole building is lit by one large hypæthral opening measuring 27 feet across. Holes in the floor beneath the opening carry off the rain water from the interior; these holes communicate with the Cloaca Maxima. The bronze doors are still preserved, they have fluted pilasters on either side of the panelling; the pilasters have Tuscan capitals with egg and tongue mouldings. They resemble in treatment the bronze doors of the Temple of Romulus and those of the Curia.

Internally the building is richly lined with marble, the

capitals of the columns originally having been covered with Syracusan bronze. Externally the concrete of the Rotunda was faced with brick, which in its turn was hidden by marble slabs up to the first string course; these slabs were 5½ inches thick, above this the brick was hidden by stucco. The seeming "relieving" arches of brick facing as now exposed had no structural significance, since the body of the wall was of solid concrete.

The circular temples of Baalbec, Spalato, and Minerva Medica were also described.

There were two types of basilicas or halls of justice, the wooden roofed type and the vaulted type. The Basilica of Trajan belonged to the former, that of Constantine to the latter. The basilica consisted usually of a nave and aisles, or two aisles, with semi-circular exedrae at either end of the nave, in which the prætor and assessors sat to administer justice; the prætor in the centre. The aisles frequently had galleries above, light usually being admitted by the clerestory. An opportunity for dwelling more in detail on the basilicas which were explained in the lecture will no doubt be afforded in dealing with the early Christian churches later on.

ACTION RE ARCHITECTS' CERTIFICATE.

MR. JUSTICE SCRUTTON, in the King's Bench Division on January 21, heard an action concerning a claim for 57½, balance of an amount certified by two certificates of Messrs. Bingham & Broughton, architects. That was in regard to work done at 396 Brockley Road. The

plaintiffs were Messrs. Bliss Bros., of 300 Brockley Road, and the defendant was the building owner, Mrs. Bond, at whose premises, 396 Brockley Road, the work was done. She presented a counter-claim, alleging breach of contract in that the work had been faultily done by Messrs. Bliss and was uncompleted.

Mr. Justice Scrutton decided in favour of the plaintiffs concerning various legal points. He held, amongst other things, that the architects had jurisdiction to issue a second certificate, although before it had been issued there was a dispute between the building owner and the builders. He did not give formally judgment for the plaintiffs, having regard to the question of the counterclaim, which was not determined. It was agreed that the counterclaim should go to an independent expert, Mr. G. Dunsmore, of Honor Oak Park, in the event of his willingness to act, and he (his Lordship) directed Mr. Dunsmore to report his several findings to him. Mr. Dunsmore must consider amongst other things whether any deviations from the specifications—if any—had been authorised by the architects, and whether these were legitimate variations.

ENGINEERING PLANT IN INSTITUTIONS.*

(Continued from last week.)

THE second type needs little description, and merely consists of tubes in which exhaust steam is condensed, after being passed through a grease separator, heating the water in the outer jacket. This type should be used where no grease filtration plant exists, and the greasy condense water turned to the drain.

Feed Pumps.—It is particularly difficult to be brief on this subject. The variety of choice in feed pumps leaves nothing to be desired. There is the horizontal type of single-cylinder, double-acting, vertical single-cylinder and compound, horizontal and vertical duplex pumps and ram pumps, not to mention sundry flywheel donkey pumps, and various types of injectors.

Each type has its advocates and users, and improvements are still coming in where it was thought perfection existed before. For a long time the reproach of lost motion lay against the duplex pump, but even yet, though this has been overcome, there is still the two-to-one chance of breakdown.

Whatever type is used, however, slow piston speed is absolutely essential. It is a good practice also to omit air vessels and snifting valves from feed pumps, and where these are supplied the writer always makes a practice of having them removed.

Steam Piping Installation.—On the face of it there would seem to be no simpler proposition than to connect up to the steam boiler, and run a pipe line to supply the various points requiring steam; but upon this subject alone it would be possible to wander off into quite a long dissertation. But here again, it is not the writer's intention to do more than indicate the points which should govern the successful design of a steam piping system. Steam pipes should be neither too large nor too small. They should not be too large on account of the resulting increased coal consumption. The heat loss from a single square foot of uncovered steam-pipe surface is equal to $\frac{1}{2}$ lb. of steam condensed per hour, and there can be no possible justification whatsoever, either in point of capital cost or working cost, for the use of, say, a 4-inch diameter steam pipe where a 3-inch pipe only is necessary. The surface of the former is 0.34 times greater than the latter, and the annual loss in terms of cash would approximate 1s. more per lineal foot of uncovered pipe than it need be, merely due to the difference in size, figuring on the price of coal at 20s. per ton, and a boiler efficiency of 70 per cent.

The principle of arriving at the size of steam pipes is based upon the velocity of the flow of steam, and the maintenance of a given pressure at the end of the pipe line. The whole process of calculation is an exceedingly interesting one, but far too lengthy to be entered upon here; but put briefly, the point to be decided is whether the steam is required for its heat or its pressure. For power purposes the loss of pressure due to the flow of steam is generally fixed at 1 lb. per 100 lineal feet of steam pipe, but for purely heat purposes the permissible pressure loss may be much more than this. Thus, to deliver 1,200 lbs. of steam per hour a distance of 800 feet to run a steam engine, would require a

3-inch pipe, assuming that a drop in pressure of not more than 4 lbs. were to be allowed and based upon a velocity of 7,000 feet per minute. Reducing this pipe to $2\frac{1}{2}$ inches would have the effect of doubling the pressure drop, but whereas this, perhaps, would not be allowed in the case of an engine supply where the steam is converted into work, it makes not the slightest difference when the steam is required only for its heat.

The matters which require special consideration in the running of a steam main are efficient drainage of the water, and adequate provision for the lineal expansion of the metal due to the heat.

Water in the steam main is undesirable, for two principal reasons. Firstly, it has the effect of condensing more steam, and is thus wasteful. Secondly, it may become a source of trouble and annoyance by producing the condition known as water hammer. Water occurs in the steam main by "priming" over from the boiler being carried out in a spray, owing to the steam leaving the boiler at too high velocity, and by condensation of the steam in the pipe by heat losses from the surface, and by giving up its heat to the priming water. The prevention of the first condition has already been touched upon, and the writer regards it good practice to make the boiler coupling pipes large, so that the steam may leave the boiler at a low velocity, which may be increased, as already mentioned, for the delivery mains and service pipes.

Many engineers pin their faith to steam dryers for the purpose of ridding the steam of priming water, but obviously the best practice is to prevent priming altogether, as far as possible, rather than separate the water from the wet steam after it is carried over.

Steam dryers or water separators, are fitted direct in the pipe line, and are of two types: (1) Where the wet steam is carried into a chamber fitted with a helix, or screw, to give the current of steam a whirling motion, which has the effect of throwing off the water which is being carried along by the velocity of the steam, in a tangential direction, and depositing it on the sides of the chamber, when it trickles down the sides to the bottom of the chamber, from which it is drained through a steam trap. (2) The other type of separator consists fundamentally of a large swelling in the steam main. As the priming water is only carried in the steam current by virtue of its velocity, and since the velocity is inversely proportional to the area of the passage, upon the velocity receiving a sudden check, the last-named type drops the water carried by the steam. Depositing plates are fixed in some with vanes, or perforations, to assist the action, and the steam passes on its way, usually in an upward direction, leaving the water behind; or perhaps it should be rather said that it is supposed to do so. While some are efficient, in many others—unless kept thoroughly and quickly drained—some of the water is picked up again.

In order to arrest the condensed water, which travels along the pipe, pockets should be formed at intervals to catch the condense water. An exceedingly good method of draining the steam main is by forming relay drains at convenient points, and by building this relay fitting into the wall it serves the double purpose of a drain and an anchorage to take the expansion thrust, and the water is drained from the pocket through a steam trap.

The popular definition of a steam trap is an appliance for draining off water from steam pipes without allowing any steam to escape. This, of course, is as it should be, but is not always true in practice. Traps are constructed on two principles, namely—the expansion of solids or liquids by heat, and by syphonic action. There is no question whatever which type is the more economical trap from a heat point of view. Expansion traps eject the water almost as soon as it is formed, with the result that in the case of condensation from high-pressure steam the high temperature water bursts into steam, on being liberated into the atmosphere, and a large proportion of its heat is thus lost. This type of trap is also more suitable for use with high-pressure steam than for low pressure, although many forms are made to work with low-pressure steam.

If an expansion trap draining a high-pressure steam pipe is fixed in the vicinity of a low pressure steam main the condensation water may be discharged into it, instead of to atmosphere, or to a condense main, where the heat is lost; and since condensation water, from 120 lbs. per square inch steam, when discharged into a 5 lbs. per square inch steam main, gives off 10 per cent. of its heat in steam, the economy may or may not be worth while.

Almost any steam trap may be made to lift the water of condensation to a reasonable height, in relation to the steam pressure (always providing the body of the trap is sufficiently strong to resist the steam pressure), by the simple

* A paper read before the Association of Engineers-in-Charge on January 11 by Alfred E. Wheeler (Prize Medallist, R.San.I.).

process of fitting the outlet of the trap with a non-return valve.

One of the most troublesome problems offered in steam practice is that of expansion of the pipes. A frequent question put by one engineer to another is: Which is the best type of expansion joint? The writer's opinion is that they are all an unmitigated nuisance, and things to be avoided. Those of the packed gland type refuse to move at the psychological moment—usually at contraction—with the result that the pipe line breaks. The copper loop type are not much better, and usually find a weak spot to expand on, where they finally break.

The operation of brazing the flange also often upsets the most carefully annealed metal, and in addition, also if they are not frequently removed and annealed, the copper hardens and cracks. Perhaps the best practice is to go out of one's way to avoid them altogether. This can often be done by changing the direction of the main at right angles to its length, in mid-position between two anchored points, and if the piping is of cast iron the bends on these turns should be made in steel.

Where this cannot be done then, perhaps a good gland joint, constructed entirely of cast iron, treated with the "Bower-Barff" process, is best, the gland round the sliding sleeve being packed with a graphite packing. Frequently, from motives of making a "good job," packed joints are used with gun-metal sleeves working into a cast iron body, forgetful of the fact that the co-efficient of expansion of the gun-metal is greater than that of the iron, which in itself is conducive to such binding.

Whatever type is used due care must be taken to "fix" the steam pipe in suitable positions in relation to the expansion joint, to ensure the expansion taking place regularly.

After the steam plant and its distributing system, the steam-using appliances naturally follow, the principal of which are calorifiers for heating water for the purpose of supplying radiators for warming the buildings, and for hot-water supply for baths and taps, kitchen apparatus and laundry apparatus.

As the steam pressures for these different purposes vary somewhat we may consider the point a few moments. In the condensation of steam only the latent heat is employed, the water of condensation returning practically to its original boiling point. Since the latent heat of low-pressure steam is greater than that of high-pressure steam, it is obviously more economical to use low-pressure steam than high-pressure. The important point to be here noted, however, is that this is only true where the steam is generated at the low pressure. When the steam pressure is reduced by a reducing valve this is not correct, as the steam expands to the lower pressure at little less than the temperature of the high-pressure steam from which it is reduced, the low-pressure steam being superheated to the extent of the difference in the temperature.

Although it is on the side of economy to heat water with low-pressure steam, the calorifiers require to be considerably larger than with high pressure, and a calorifier using steam at 50 lbs. per square inch pressure will perform nearly twice the duty of another of the same size using steam at 5 lbs. per square inch pressure.

Steam pressure for kitchen purposes is not so important as temperature, and for considerations of safety this should not exceed 10 lbs. per square inch. For laundry purposes at least two pressures are required; a general pressure for washing machines, boiling, &c., of 10 lbs. to 15 lbs. per square inch, and a pressure of 40 lbs. per square inch for ironing machine beds, where these are steam-heated. A third and higher pressure is necessary when the laundry is steam-driven, which is most economical, since the exhaust steam may be re-used in the drying-room heaters.

In all these cases the steam is carried to the point required at the highest pressure, and reduced to the required pressure by reducing valves. These valves are so constructed that the low-pressure steam, acting on a diaphragm, piston, or through a water column over a given area, will close the valve against the high pressure when the given low pressure is reached. As the whole successful working of this valve depends upon its ability to remain tight against the high-pressure steam, care should be taken to avoid scoring of the seat, which is so common a feature with steam valves which are frequently raised "just off the seat." With this in mind it is always best to have the valve too small rather than too large, as a shortage of low-pressure steam causes the valve to open wide and prevent scoring. The only disadvantage in the valve being small is the high velocity, which causes the steam to "whistle."

(To be continued.)

MANCHESTER SOCIETY OF ARCHITECTS.

ON Wednesday, the 25th inst., a lecture was given by Mr. J. L. Ball, Professor of Architecture at the Birmingham University.

After a brief introduction indicating the necessity for the study of ancient architecture, and suggesting some methods of study, Mr. Ball proceeded to give a general account of the three East Anglian cathedrals of Peterborough, Ely, and Norwich, pointing out the close resemblance which originally existed between them, their characteristics as Romanesque minsters, and the changes which have taken place in them in later times. Then, turning aside from questions of archaeology, the architecture of the three cathedrals became the subject of discussion, and the opinion was expressed that here, at any rate, the architecture of the twelfth century is supreme in all purely architectural qualities; attention being specially directed to the expression in it of the sense of power. Nor is this expression of power merely crude and uncouth, but the work of deliberate and expert artists, marked by maturity of style and refinement of proportion. The nature of proportion in architecture is next discussed at some length and illustrated from these cathedrals, whose architecture is so sparing of decorative accessories, where we feel, as we seldom can, how little architecture need rely on ornamental details, how much on proportion. Some of these proportions are then noted and compared, particularly the great galleries, the division of the internal height into three nearly equal parts; a notable characteristic of this group of cathedrals which connects them with Winchester, Cerisy, and l'Abbaye aux Hommes.

He then proceeded to a consideration of the exterior architecture of the three cathedrals, noting a certain inferiority to the interior, the difficulty in all architecture in the grand manner of binding together interior and exterior in organic unity. Nevertheless, certain fine qualities are noted in the exteriors, and it was pointed out that both in the Romanesque and Gothic periods the resources of mediæval art were concentrated on the west fronts. The only west front of Romanesque work in the three cathedrals is that of Ely, and this was described. Passing on to the west front of Peterborough, the opinion was hazarded that we have here a Romanesque design translated into the new Gothic manner of the thirteenth century.

These west fronts suggest the principle of frontal design, what Professor Loewy calls the "Law of Frontality," the law of design by virtue of which an object is always conceived in its broadest and most comprehensive aspect.

The lecturer proceeded to consider this law in its relation to architecture and also the corollary to it, called the Law of Approach, showing that in these laws we obtain a glimpse into the method of Romanesque and later Gothic design.

Mr. Ball then analysed the principles of Romanesque design as exemplified in the East Anglian cathedrals, pointing out that the Romanesque architects were essentially arch-builders, using arcading not only for structural reasons but for the purposes of art. Attention is directed to the æsthetic value of the semi-circular arch in the sequence of arcades, to the solution of the problem of stability by massive supports without the aid of buttresses, and to other points in the architectural expression of arched construction suggested by a study of this group of cathedrals. The question was asked whether it is possible to detect the peculiar quality in the work of the twelfth century which marks it off from other arched construction, and the answer was found in the expression of flexibility, of the elasticity of structure; and it was shown in what way this expression of flexibility is obtained, the explanation being based on the circumstances under which Romanesque architecture was done and the conditions of building wholly unlike those of the present day.

Similar reflections on the circumstances of ancient building were next shown to afford some clue to many of the puzzling irregularities in it, and the question of the time actually spent in building a cathedral was fully discussed.

The name "Norman" often applied to Romanesque art in England brings up the whole subject of the local schools of Romanesque, their diversities, and the essential unity of idea which gives to Romanesque architecture everywhere its distinctive character. The paper went on to describe the main purpose of Romanesque from the time when it first emerges from the Roman basilica, its purpose as essentially ecclesiastical art, and as expressing the Catholic ideal.

In these cathedrals of the twelfth century we see Romanesque architecture in the maturity of its genius, and thus, without any period of decadence, it passed. The most valuable lesson we can learn from these great works is not to attempt to reproduce them.

MODERN EUROPEAN ARCHITECTURE.
GERMANY.[From *Dekorative Kunst*.

COMBINED CHURCH AND FLATS, NASSAU STREET, BERLIN.—Herr HEINRICH STRAUMER, Architect.

OUR CONTEMPORARIES FROM OVERSEAS.

THE *American Architect* (New York) devotes the whole of its principal illustrations to a beautiful series of photographic views of the garden at Pocantico Hills, New York, the estate of John D. Rockefeller, Esq., of which Mr. William Welles Bosworth is the architect. There is also a leading article with further illustrations in the text describing the gardens.

La Construction Moderne (Paris) illustrates further examples of the Parisian prize façades of 1909, No. 82 Rue

Saint Lazare, by Mons. Jarlat; No. 83 Avenue Henri Martin, by Mons. Stoullig; and No. 42 Cours-la-Reine and Place de l'Alma, by MM. Naville and Chauquet. Two prize designs in the competition for the Godebœuf prize at the Ecole des Beaux-Arts are also given.

Berliner Architekturwelt (Berlin) has this month a very excellent number containing a full series of views of the Brandenburg Assurance Institution, of which Herr Hermann Rohade is the architect; the Paul Gerhardt Church at Schöneberg, by Herr Fr. Schultze; the Schloss Königs-

waldau, by Herren Dinklage, Paulus, and Lillöe; and some examples of Berlin street façades and modern German sculpture.

Moderne Bauformen (Stuttgart) gives most of its space to two houses by Professor Wilhelm Kreis, of Düsseldorf, very thoroughly carried out even to the furniture from the architect's designs, and hence thoroughly harmonious. An excellent school at Zürich is also illustrated, of which the brothers Pfister are the architects.

The *Architectural Record* (New York) for this month is a monograph of the ecclesiastical work of Messrs. Cram, Goodhue & Ferguson, with a few examples of their secular and miscellaneous buildings added.

Construction (Toronto) makes a special feature of "Types of Pacific Coast Houses," including examples from British Columbia and Southern California, which show the development of the bungalow type of house. Other illustrated articles deal with the new municipal buildings of New York City and the restoration of the Campanile at Venice.

NOTTINGHAM ARCHITECTURAL SOCIETY.

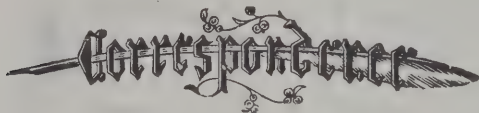
THE third meeting of the Designing Club connected with this Society was held on Tuesday, January 17.

The subject set for competition was a design for a small detached house in a garden city.

Six designs were sent in, and were criticised by Mr. E. H. Heazell, who had drawn up the conditions.

A discussion took place, at the close of which Mr. Heazell was thanked for his kindness in preparing the subject and giving such an interesting criticism.

The meetings of the Designing Club are being well attended, not only by those who compete, but by the older members, who attend when possible, and by their kindly criticisms and hints help to make these meetings useful to all.



[The Editor will not be responsible for the opinions expressed by Correspondents.]

Proposed House at Chesham.

SIR,—In regard to the interesting house illustrated in the current issue, and so reminiscent of Mr. Ernest Newton both in planning and elevations, it is to be regretted that such liberties of draughtsmanship should be taken, with the view apparently of improving the perspective sketch. To transfer the south-west flank in plan to show as the north-east flank in perspective, and to transpose *en revers* in regard to the terrace boundary wall is scarcely to be justified. It is such manoeuvring as this that causes many architects to deprecate the admission of competition perspectives. Why could not Mr. Stanton have shown a left-hand flank in perspective, and thus avoided misrepresentation?—Faithfully yours,

PERCY L. MARKS.

Albert Buildings, 49 Queen Victoria Street, E.C.
January 23, 1911.

Petrol Air-Gas.

SIR,—Mr. Key's letter in your last issue raises a question which I have not seen mentioned before, viz., the relation between the expressions "per cent. mixture" and "cubic feet per gallon" when used to designate the same gas. Obviously Mr. Key finds himself in trouble over this relationship, and it is probable that others experience the same difficulty. I notice also that Prof. Smith has not touched upon this point, so that the following remarks may not be out of place.

From the fact that 100 volumes of air at 50° Fahr. absorb 17.5 per cent. vapour of spirit of sp. gr. 0.650, Mr. Key makes the startling statement that this is equivalent to 580 cubic feet to the gallon. The intermediate mental step, which unfortunately he omits, would be interesting.

To calculate the number of feet to the gallon of any percentage mixture we must have another factor besides that of the sp. gr. of the liquid, viz., the number of cubic feet to the gallon of saturated vapour the liquid yields upon evaporation. This one can calculate for pure substances as follows:—

The gram molecular weight of any substance in the gaseous form at 0°C. and 760 mm. occupies 22.4 litres, or

in English measures the molecular weight in lbs. occupies 359 cubic feet. From this we have that for hexane (C_6H_{14}) sp. gr. 0.663. 86 lbs. occupy 359 cubic feet, whence

$$1 \text{ gallon occupies } \frac{359 \times 6.63}{86} = 27.7 \text{ cubic feet.}$$

Similar calculations for the hydrocarbons in the petrols used for lighting purposes give the following table:—

Pentane	sp. gr. 0.626	gives	31.2	cubic feet	per	gallon.
Hexane	" 0.663	"	27.7	"	"	"
Heptane	" 0.688	"	24.7	"	"	"
Octane	" 0.719	"	22.6	"	"	"
Nonane	" 0.741	"	20.8	"	"	"

and if we plot a curve from this data we can read off the cubic feet per gallon corresponding to any sp. gr., as the fact that any petrol is a mixture of several of these hydrocarbons cannot influence the result to any appreciable extent.

Taking the case in point of a 17.5 per cent. gas from petrol of 0.65 sp. gr. we see from the curve that this spirit gives 28.5 cubic feet per gallon, hence this 17.5 per cent. gas represents

$$\frac{28.5 \times 100}{17.5} = 163 \text{ cubic feet of gas per gallon,}$$

and not the amazing figure given by your correspondent.

The test he says he witnessed, in which 0.715 spirit gave 190 cubic feet of vapour, is so extraordinary as to be hardly credible, as one would expect it to give only 23 cubic feet at 0° C. and 760 mm. No temperature correction could expand it to this figure, and it looks to me as if he were mixing up air saturated with vapour and vapour only.

Examining the statement about which he is sceptical, viz., that with 0.720 Shell spirit 1,840 cubic feet of gas per gallon is a 1½ per cent. mixture, this works out from curve to be 1.24 per cent. A 1.5 per cent. gas should be 1,500 feet to the gallon. The plant, the makers of which give these figures, employs a self-burning mixture, and this is necessarily explosive.

I am sorry to see that Mr. Key is worried at Professor Smith recognising his "nine-chambered turbine" as "a kind of reversed gas meter." From the drawings supplied I should have been inclined to agree with Professor Smith, but I have seen no accurate definition of the word "turbine," and it may be elastic enough to cover even "a reversed gas meter."—Yours faithfully,

E. SCOTT-SNELL.

Walton-on-Thames: January 23, 1911.

SIR,—I would like to congratulate you on your recent series of articles on petrol air-gas. I consider them invaluable, and I have (with the correspondence which has appeared on the subject) made a small booklet, which I intend to keep for reference. I was interested in the series on Refrigeration, which I have also kept, but, unfortunately, there were, in my opinion, too many chapters. If not too late, may I suggest to "Inquirer," under the heading of "Thin Walls and Piano-playing," that he should get into communication with A. L. Gibson & Co., of Strawberry Vale, Twickenham, and ask for particulars of their Cabot Quilt for deadening sound.—Yours, &c.,

A COUNTRY ARCHITECT.

Planning of a Town.

SIR,—Referring to your article on "The Planning of a Town" in your issue of the 13th inst., perhaps you will allow me to point out that the village of Bournville is not owned by Messrs. Cadbury Bros., nor was it built for the accommodation of their workpeople. It was founded by Mr. G. Cadbury with the object of providing homes in rural surroundings for men employed in factories or similar indoor occupations in Birmingham and neighbourhood, the desire being to try the effect of good houses and country life upon the men and their families. Ten years ago the village was handed over by Mr. Cadbury to trustees, who now administer it. The deed of foundation provides that the total revenue from the village and estate shall come into the hands of trustees; and be used by them for the extension of the scheme; the trustees are thus an entirely independent body, and administer the property in the interests of the nation. The result thus far, whether judged by the demand for houses, the health of the population, or the way in which the gardens are cared for, is entirely satisfactory.—Yours truly,

JOHN H. BARLOW, Secretary.

Bournville Village Trust, Bournville, near Birmingham.
Estate Office, Bournville, near Birmingham.
January 24, 1911.





PHOTO BY T. LEWIS, 200 STRATFORD ROAD, BIRMINGHAM.

"INK-PHOTO" SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET FETTER, LANE & CO.

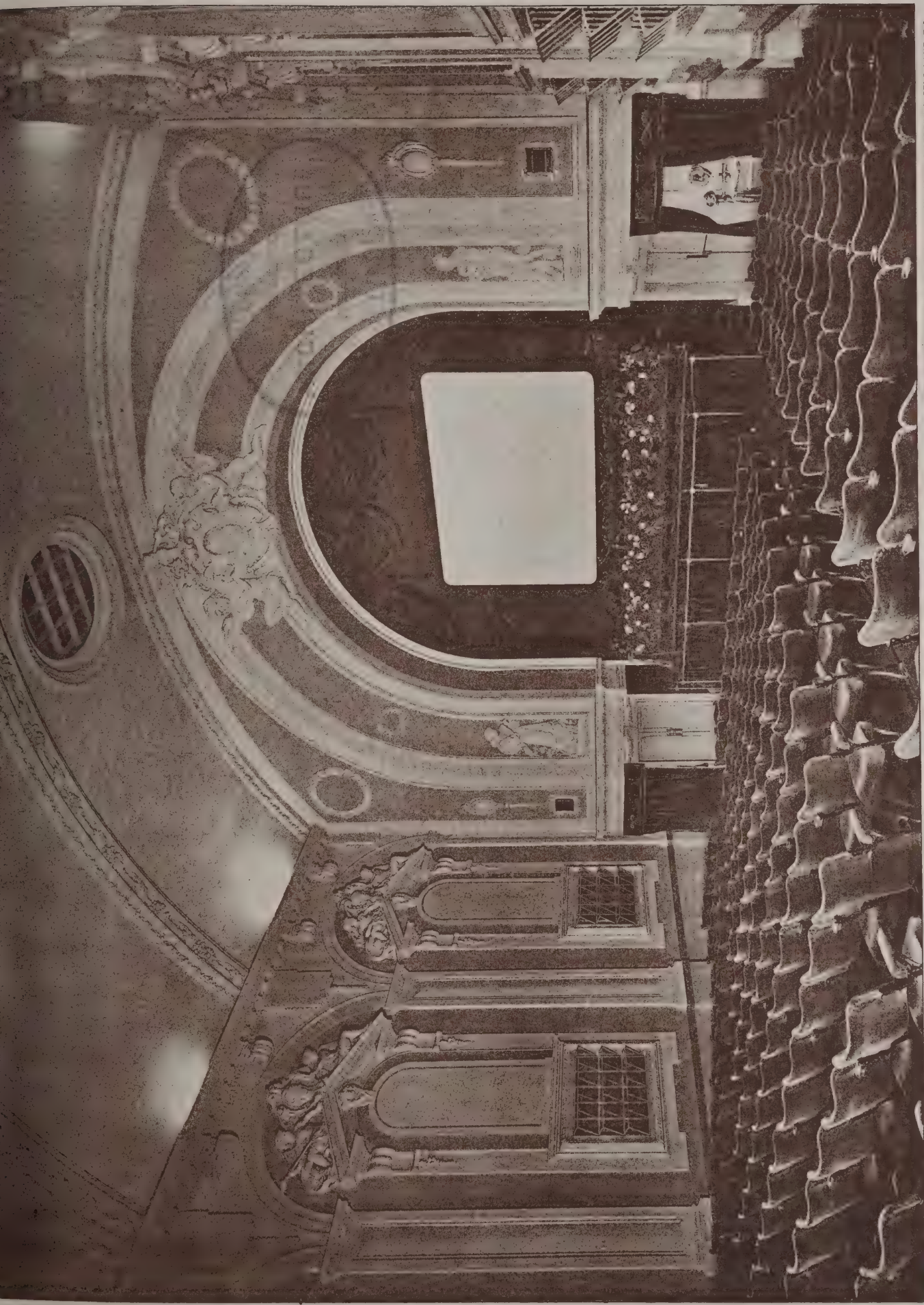
DETAIL OF WEDGWOOD LOUNGE

"THE PICTURE HOUSE," BIRMINGHAM.

Messrs. NICOL & NICOL, Architects.

The Architect, Jan. 27th 1911.





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MAIN HALL.

"THE PICTURE HOUSE," BIRMINGHAM.

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PHOTO BY T. LEWIS, 200 STRATFORD ROAD, BIRMINGHAM.



PHOTO BY T. LEWIS, 200 STRATFORD ROAD, BIRMINGHAM.

FRONT ELEVATION.

"THE PICTURE HOUSE"
Messrs. NICOL & CO.

27th 1911.



BACK ELEVATION.

INK PHOTO SPRADUE & CO. 114 & 115 EAST WEDGWOOD STREET, BIRMINGHAM.

BIRMINGHAM.

Architects.

The Architect.

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FORTHCOMING EVENTS.

Monday, February 6.

Architectural Association : Professor W. R. Lethaby on "Greek Buildings."
 Surveyors' Institution : Mr. William Woodward on "The Evolution of Fire-resisting Construction."
 Royal Academy : Lectures on Sculpture by Professor W. R. Colton, A.R.A. (3) "The Statue."

Liverpool Architectural Society : A paper by Mr. Temple Moore.
 Institute of Sanitary Engineers : Presidential Address by Mr. Arthur J. Martin.

Tuesday, February 7.

Guild of Architects' Assistants : A Mock Arbitration Case; opened by Mr. J. Gerald Large.

Wednesday, February 8.

Carpenters' Company : Mr. Laurence A. Turner on "Wood-carving."
 Edinburgh Architectural Association : Paper by Professor Geddes.
 Northern Architectural Association : Paper by Mr. J. Bruce.
 Manchester Society of Architects : Paper by Mr. F. W. Jackson.

Thursday, February 9.

Carpenters' Company : Mr. M. H. Spielmann, F.S.A., on "British Sculpture of To-day."
 Sheffield Society of Architects and Surveyors : Mr. W. G. Buck on "Bricks and Brickmaking Materials."
 Society of Architects : Col. F. S. Leslie, R.E.(Ret.), on "The Turned Lattice Work of Egypt."
 Royal Academy : Lectures on Sculpture, by Professor W. R. Colton, A.R.A. (4) "Ancient and Modern Sculpture."
 Leeds and Yorkshire Architectural Society : Mr. F. G. Eden on "Varallo, Orta, and Varese."

THE RESPONSIBILITY OF ARCHITECTS.

THE responsibility of an architect for the strict carrying out of his plans and specifications is too often scarcely realised by the young practitioner, and very frequently overlooked by architects who can no longer be called young. Fortunately, in most cases things go fairly smoothly and the architect is able, at his occasional visits to the works in progress, to detect any flagrant deviation from the contract.

But the detection of flagrant deviations on occasional visits by no means satisfies the legal obligation of the architect to his client. Lawyers and the general public in a very large degree look upon architects as policemen and detectives, who will protect them from the wrong-doing, whether by ignorance or intention, of the builder and his workmen, who are the actual executants of the contract to build a certain structure.

Of this attitude the case of the Leicester Board of Guardians *v.* TROLLOPE, which we reported last week, is the latest example, and the unfortunate architect is saddled with the responsibility of making good damages of between 2,000*l.* and 3,000*l.* to a building erected from his plans and specification, besides the cost of an expensive law suit.

In this particular case it was made clear at the trial of the action that the clerk of the works did not ensure the carrying out of the work in accordance with the specification, nor did he, so far as appears from the evidence, call the attention of the architect to a departure from the contract. It is obviously impossible for an architect, unless he is on the building during the whole time that workmen are there, to see that all the work is being properly done, and in a building of any size, such as the very large infirmary built by the Leicester Board of Guardians, would the constant attendance of the architect himself ensure the absolutely faithful execution by every workman of every piece of work in the building?

But no architect does or can spend all his time on a building during its erection, and he must therefore depend upon the ability and the honesty of someone else to act as clerk of works and see that every stone and brick, every piece of timber, every yard of concrete, is in accordance with the specification. If the clerk of works, through incompetence, inattention, or intent, permits a deviation from the contract and trouble ensues, so that the employer suffers damage, the architect, and not the clerk of works, is responsible for that damage. This is the law.

In the case to which we have referred it was distinctly suggested by counsel for the plaintiffs that it was the duty of the architect to check the clerk of works. If the architect is to check the clerk of works, what is the use of this official? The only reason for the employment of a clerk

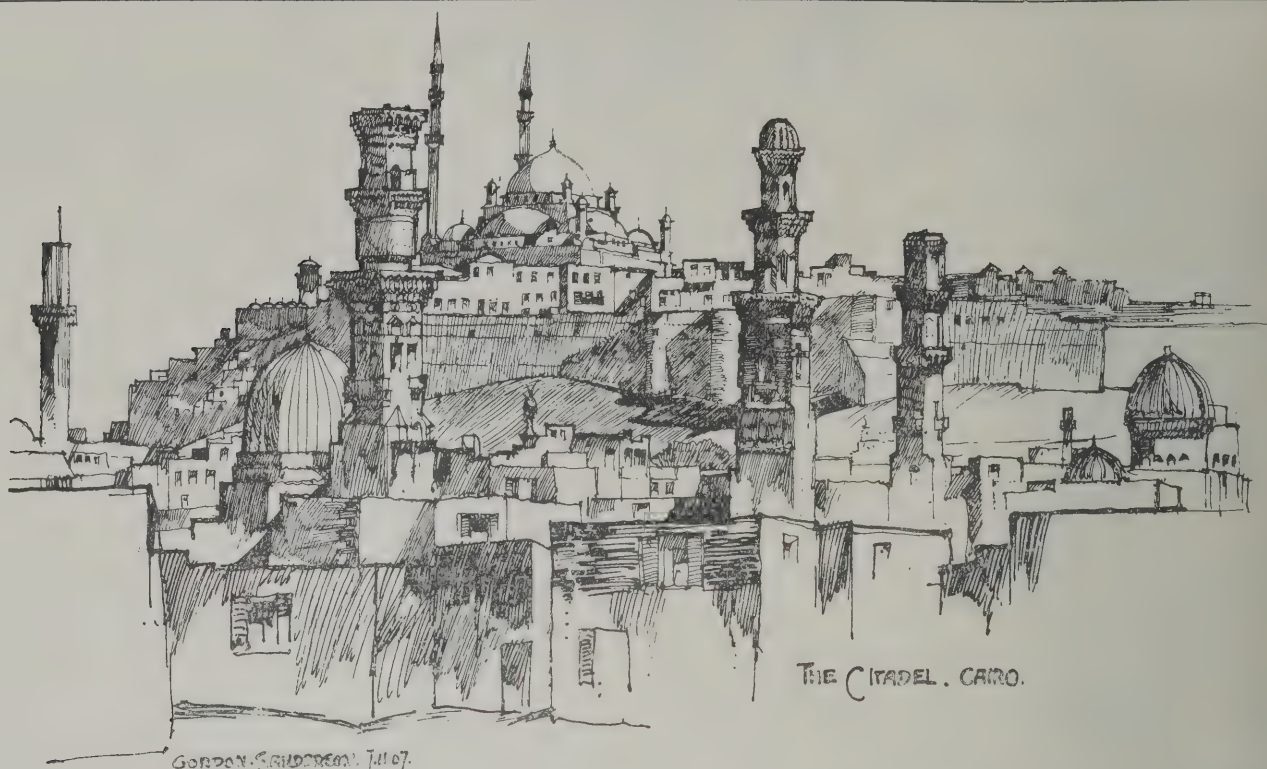
of works is that he may do for the architect what the architect is physically incapable of doing for himself, by exercising the constant supervision necessary to ensure the exact fulfilment of the contract.

Are the public prepared to pay for constant supervision by the architect himself, so that no architect shall be engaged on more than one building at a time, and when he has made his drawings and specification and building operations commence he shall transfer himself to the job and check everybody and everything until the completion? It might be a good thing for architecture and for architects if such a remodelling of our modern methods came to pass, but we do not think there is much likelihood of such a thing happening. The architect would be in closer touch with the craftsman, he would know and control his building from start to finish in a far more thorough manner than he does now, he might even take a hand in personal labour on the actual materials. But are the public prepared to pay three guineas a day to an architect for doing what is now supposed to be done by a clerk of works at three guineas a week?

If the public are not prepared to pay for the architect's constant attendance on the building is it right that they should expect the same minute supervision as if they did pay? Yet that is what the decision in the case of Leicester Board of Guardians *v.* TROLLOPE comes to.

When the Royal Institute of British Architects formulates the revised Schedule of Charges it seems to us that provision must be made for dealing with the conditions of an architect's responsibility as now recognised by the law. The hitherto customary 5 per cent. does not give a sufficient payment to the architect for the minute supervision for which he is legally responsible, and any attempt to continue payment on that basis makes architectural practice a gamble in which the architect stakes his reputation and his fortune on the ability and integrity of a clerk of works, whom he is expected to check. Engineering works of any magnitude have one or more resident engineers, and architectural work must be so well remunerated as to provide for the payment of a resident architect. We are aware that to some extent and *sub rosa* architects in large and widely distributed practice employ local colleagues or assistants from their own office to supply a greater amount of supervision than the titular and original designer can afford to give. But in the ordinary way 5 per cent. does not cover the expense of such an arrangement, and the responsibility is still existent.

We have hitherto spoken of works of sufficient size to justify the employment of a clerk of works, but the architect is still legally liable for all sins of omission or



commission by the builder in small affairs, and we know of instances where architects have been called upon to pay, and have paid, for non-compliance with the terms of a building contract resulting in loss to the employer, even when no clerk of works has been employed. This is particularly hard upon those architects, often young architects, who must be content to carry out small jobs, often at a considerable distance from their office. If an architect visits a job once a week he is giving quite as much attention as can possibly be expected, and more than he can often spare, and an ignorant or dishonest workman can do a great deal of mischief in a week.

Thus it is vitally important that the Institute Schedule of Charges should clearly define the extent of the supervision for which the ordinary fees are the proper remuneration. If the public require more than this, they must be prepared to pay for the additional security, and the Schedule of Charges must make provision for this.

It must not be forgotten in a discussion of the responsibility of architects that this is not limited to supervision of the performance of a contract. The architect is also liable for an improper performance of his duties in the preparation of the drawings and specification that form the basis of the contract. Dry rot was the trouble at Leicester Infirmary. If the architect's drawings and specification do not provide for security against dry rot, or, at any rate, entail such methods of construction as may probably lead to dry rot, he would be just as much liable for damages as if the mischief arose from insufficient supervision. If the construction shown on his drawings is insufficiently strong he is also liable, even to the extent of a criminal charge of manslaughter, should someone be killed in consequence of faulty design. With this aspect of the question no reasonable and qualified architect would, of course, quarrel, but it is well that the liability should be recognised by young practitioners who rush into practice before they are sufficiently educated. An architect is paid for the exercise of skill. If he does not possess the skill, or does not exercise it, he is liable for damages.

NOTES AND COMMENTS.

WE offer our congratulations to Mr. ERNEST NEWTON on his election to the Associateship of the Royal Academy. It cannot be said that this recognition comes too soon to one who has done so much to maintain the high standard of modern English domestic architecture and who has so

worthily followed in the footsteps of his master, Mr. NORMAN SHAW, whose first pupil he was.

THE President of the Royal Institute, Mr. LEONARD STOKES, in a letter to the *Times*, has, with his usual directness, made an excellent suggestion for expediting the completion of the connection of the Mall and Charing Cross, so that it may be ready for use as the processional road at the Coronation. Let the Government and the London County Council drop their fencing match (which, we admit, is pretty play, but somewhat tedious) and hand over the job to the Mansion House King Edward Memorial Committee, who, as Sir R. M. BEACHCROFT suggested, might provide the balance of the funds necessary. Mr. STOKES proposes that the First Commissioner of Works, the Chairman of the London County Council, and the Mayor of Westminster should form the nucleus of a sub-committee, with the Lord Mayor as Chairman, to settle the matter. We hope Mr. STOKES will not press his scheme (or is it Professor PITE's?) of a double circus arrangement as the desirable method of finishing the processional road.

THE statement which has been going the round of the Press that Mr. I. C. JOHNSON, the centenarian, was the inventor of Portland cement is not quite correct, although he must be regarded as one of the pioneers of modern manufacture in the material by the improvements he introduced in the burning. As a smart business man he also introduced cement factories where no chalk exists by taking advantage of the discarded chalk thrown out from ships sailing light in ballast.

THE case of CARMICHAEL *v.* Stonwood Patent Fire-proof Flooring Company, reported in the *Times* of Monday last, contains a warning lesson to architects who have to decide between contractors and sub-contractors in case of dispute. The defendants are said to have guaranteed certain flooring laid by them for the contractor "for a period of three years, fair wear and tear excepted, and that if the flooring proved unsatisfactory to the building owner the defendants were to refund to the plaintiff the money paid by him to them for laying the flooring, unless the architect decided that the faults complained of were due to causes beyond the control of the defendants, the decision of the architect to be binding on both parties." The architect decided against the sub-contractors, but his decision was not upheld by the Court because, being

in the position of an arbitrator, his inquiry had not been conducted in a judicial manner and had not been followed by a properly signed award.

DISPUTES between contractors and sub-contractors are of frequent occurrence, and, usually speaking, the architect of the work is the best man to decide the disputes, the parties to which are generally quite content to leave the decision to him. But the architect must remember that he is, in such instances, an arbitrator, and he must conduct his arbitration and make his award in a proper manner.

THE *Art Journal* for this month contains an article on Gatton Park, some few of the illustrations to which are of architectural features, but the majority of the natural beauties of Sir JEREMIAH COLMAN'S home. A series of papers by Mr. LUTHER HOOPER is commenced on "Art of To-day: Fine and Otherwise," the opening chapter being on "Art in the Church," the text of which is St. Christopher's Church, Haslemere, designed by Mr. CHARLES SPOONER, F.R.I.B.A., and now further adorned with fittings designed by Mr. SPOONER and hangings by Mr. HOOPER. Some of the work of GODFREY BLOUNT in "The Country Church" is also included in the illustrations. Another series of articles that promises to be interesting, on "National Character in Art" by HARRY R. MILEHAM, also commences in this number.

THE interim Executive Committee appointed in connection with the proposed Scottish national memorial to the late King EDWARD VII. have considered the four proposals put forward: 1. A memorial in Edinburgh associated with the Palace of Holyrood, in the form of a suitable memorial erected in or near the Palace grounds, as proposed in the motion of the Lord Provost of Glasgow and seconded by Lord BALFOUR OF BURLEIGH. 2. The establishment of a School of Tropical Medicine or of special clinics for cancer or consumption, as suggested by Mr. GARDEN of Troup. 3. That the memorial should take the form of a crusade against consumption, as proposed by Mr. WILLIAM YOUNGER (now Sir WILLIAM YOUNGER, Bart.), seconded by Mr. THORBURN. 4. Alternatively (a) the restoration of Linlithgow Palace as a great national museum, or (b) the establishment of a Scottish memorial library, as suggested by Lord ROSEBURY. The proposals for medical memorials were definitely negatived; Lord ROSEBURY'S scheme was supported in his absence by a letter from its proposer, but otherwise ignored; and the Holyrood scheme, for which a sketch design by Mr. R. S. LORIMER, A.R.S.A., was exhibited at the meeting, was adopted for recommendation to the General Committee. The cost is estimated by Lord Provost M'INNES SHAW at 60,000*l.*, including a certain amount of street improvement, for which it is hinted the Government might be asked to make a contribution.

In *The Antiquary* for this month an interesting paper by Mr. J. TAVENOR PERRY on "An Episode in the History of Penshurst Place" deals with the ownership of the famous old Kentish house by the PERRYS and SHELLEYS in the eighteenth century, an almost forgotten era in the history of Penshurst.

In the report of the Council of the Newcastle Society of Antiquaries the results of the explorations at Corstopitum were summarised. So far, the Excavation Committee has demonstrated that Corstopitum dated from an early period in the Roman conquest of the Tyne Valley, shared in the vicissitudes of succeeding centuries, and that its occupation continued until the very eve of the departure of the Roman troops from Britain. If the magnitude of the place and the richness of the finds at Corstopitum have called forth general interest, the simultaneous work elsewhere, that has been conducted by Mr. J. P. GIBSON and Mr. F. GERALD SIMPSON, is of great importance. Their discoveries have already added much to our knowledge of the Wall and its accessories, and those of the past year

have been of singular interest. What is described as a Roman watermill was laid bare above Haltwhistleburn fort. Mention has been made of the discovery of a mile-castle by Mr. GIBSON and Mr. SIMPSON, on the Cumberland side of Poltross Burn. Its site had been conjecturally located by Mr. GIBSON, close to the scene of comparatively recent explorations. These were carried further westward, and the work of the spade shortly uncovered the gateway. Mr. SIMPSON has since laid bare the whole interior of this mile-castle, and revealed features of special importance. Reversing the aspect of Cawfields mile-castle, this one lies on a slope facing north, with the Wall at its foot. It enclosed a series of terraced buildings intersected by a central street. These gave us, for the first time, an example where the internal arrangements of a mile-castle have remained; and by an excavation, conducted with scientific care, successive periods of occupation, destruction, and reconstruction are made manifest. It would be difficult to exaggerate the value of the work pursued by these investigators, year by year, in advancing our knowledge of the Wall and in adding to the fascination of this period of history.

TRUTH IN CRAFTSMANSHIP.*

By T. RAFFLES DAVISON.

(Official Report.)

When the dust of the workshop is still,
The dust of the workman at rest,
May some generous heart find a will
To seek and to treasure his best.

From the splendour of hopes that deceived;
From the wonders he planned to do;
From the glories so nearly achieved;
From dreams that so nearly came true;

From his struggle to rise above earth
On the pinions that could not fly;
From his sorrows; oh, seek for some worth
To remember the workman by.

If in vain; if Time sweeps all away,
And no laurel from that dust springs;
'Tis enough that a loyal heart say,
"He tried to make beautiful things."

EDEN PHILPOT.

IF you would really understand human life you will not be content to study that phase of existence which is lived by a carpenter or by an architect, by a Prime Minister or a suffragist, nor will you overlook any living type in race of men. The motives which inspire the actions of all mankind, their hopes, successes, failures, and disappointments are part of life. When we think of life as a whole, the subject appears so vast that we may well feel a profound mistrust of those who form their judgments on the facts which they alone know and understand. And a realisation of the unity which binds mankind together is the only guide to true knowledge and to all feelings of real tolerance and liberality. What is true of life is true of art. Great art is that which holds a something common to all mankind, and the outline of a Hindoo temple, of a Gothic church, or an Egyptian pyramid makes an appeal that is high above all mere particular of man or place. Thus principles which guide us to good issues in our life and work apply equally to the man of business and the architect, the carpenter and the plumber, the glass designer and the sculptor.

It is so difficult to realise that our knowledge of everything is coloured by our own personal view. How almost entirely subjective are our views of art and of life! The individuality of the person may be a great gain to art, but it has its dark side, for it fosters an ignorance of, or indifference to, the universality of things. Mill says, "Truth in the great practical concerns of life is so much a question of the reconciling and combining of opposites that very few approach to correctness."

Definition of Truth.

That which matters to all the world is Truth. You have met none who decries truth and praises falsehood. Here is a

* A lecture delivered at Carpenters' Hall, January 25. First of the series on "The Arts Connected with Building."

quality which binds all life together in one great need. Let us have truth, whatever be our work in life—emperor, statesman, merchant, painter, carpenter, plumber, or what you will. By truth, I mean a something that is large as life itself. The truth I mean is not the truth of mere verbal or written utterance, the conveyance of information for the tax collector, the father confessor, or the jury, but the truthful expression of the whole of life, our work and play, our art and business, our beliefs and thoughts. Truth is not always pleasant, not always convenient, not always easy, but it is for ever and ever the final good. I do not want to weary you with my poor expressions on so great a subject, but to make clear the point of my remarks I must say something by way of preface.

What is truth? We do not know. But we do know that in its name have been uttered and enforced nearly all the foul lies the world has known. We do know that in its name have been enacted the vilest cruelties ever conceived in past ages, and that there are exhibited to-day the most vulgar things which have ever pretended to pose as art and truth.

You may convey truth in many ways, even by facts which seem opposed to it. When the captain read over the log-book entry, "The captain was drunk to-day," the captain made a strong objection. But when a few days later he read again, "The captain was sober to-day," he found his little fault more plainly emphasised than before. Dean Alford says:—"Truth does not consist in minute accuracy of detail, but in conveying a right impression, and there are vague ways of speaking that are truer than strict facts would be." When the Psalmist said, "Rivers of water run down mine eyes, because men keep not thy law," he did not state the fact, but he stated a truth deeper than fact and truer. It is said "Truth will out." We all wish it would. Truth lies in a well. It is sunk deep under a load of tradition, and use, and perverse disguise. Does anyone know the truth about himself, his character, or even his bodily looks? To no two persons are facts the same. "The truth is, Jones is a bit of a bore," is the verdict passed by someone else on one of your most entertaining companions.

The truth about a man varies with the point of view of the poor relation, the tax collector, and the wife. It is one of the compensations of nature that we do not know what we are like. We have mirrors, but few of us realise what is our back appearance. How seldom we trouble much about the back end of buildings; the sordid cement behind the marble! But the point of view colours the truth so that we all make truth something subjective instead of objective, a something seen through our dimmed eyesight—eyesight obscured by tradition, heredity, prejudice, friendship, or hate. "Truth is one, for ever absolute, but *opinion* is truth filtered through the words, blood, and disposition." "The truth is," says a friend, and when you demur he says, "Well it's my opinion: " what a very different thing!

"Whenever a man does a thoroughly stupid thing it is always from the noblest of motives," wrote someone the other day.

Catholicity.

Is not this a good reason for cultivating a catholicity of view in art? Why should you be compelled to assume that there is no salvation in architecture but the Grand Manner, when all the time you are yearning to be a traditional Englishman with an eye for the picturesque, true to a traditional instinct for romance and poetry, and a perfect abhorrence of the cold and formal traditions of matter of fact and stately Roman art? Why should we not be ourselves? And why also should we not modify our native barbarities by the refinements of Greece and Rome, or even stimulate our love for the romantic and picturesque by Romanesque churches, German castles and French chateaux? But let us try to have good ideals that their expression may be the truth of our real selves and not mere affection. Let us try that our work may be better and our aims finer.

Desires and Deserts.

As the man is in himself so his work will be. You cannot disguise yourself in your work, and perhaps not much in your surroundings. If you are more impressed with the dignity of life than with its joyfulness, you will perhaps keep your house tidy and abolish the cat, the dog, the bird, the child, the noise, the dirt, and the disturbance. Your life may not take on so rosy a hue as that in which the joy of life is thought of most account, but it may be truer to your ideal and desire. Does not the thoughtful, practical, tidy workman score over the hasty and careless worker, and are they not both the victims of their character? It is foolish to think you can separate art from life, for as you live, so you are, and so you will act. Can we

then over-estimate the value of truth as a foundation of our character and aims?

In matters of art we may conclude that generally speaking we get our deserts. When I see a great commercial building bristling with ostentatious vulgarity I conclude that the client probably wanted it and, alas! probably likes it. When I see bicycles and monkeys and harps made up into silver brooches I conclude the ladies who will buy them have no better ideas than to like them and—perhaps—will look just as beautiful in spite of them. When a great Cardinal puts up a cathedral in an exotic style and everyone is willing to accept it I conclude it doesn't much matter, and that religion in this case is a thing above architectural association and tradition. When clients keep going to the wrong architects I conclude they are not particular about their architecture, and when the shopkeeper says he is going to give you art colours I conclude there is a demand which can be satisfied with such foolish description. If we do not aim at Truth and demand it, we must not complain if we do not get it. At any rate we might say that much of the vulgarity and fussiness in modern art is a truthful symbol of the hurry and bustle of modern life.

The Unity of Art.

May I urge one point which I think to be of supreme importance to us all? Do not let us be for ever taking such partial views of truth, and dividing things into special classes and divisions. When a child asks if Mr. Smith is a bad man we should say no, even if he has done many bad actions. No one is bad and no one is good—altogether. Men do bad things and good things, but the man you call bad does good things, and the man you call good does bad things. Everyone is an artist, writes Mr. Felix Clay, and is continually using the same feelings and motives in ordinary everyday life which have only to reach a certain degree of intensity to be labelled artistic. Because I make a mess of my arrangement and design, that may not prevent me being a very skilful carver. I may have carved a panel which in sheer dexterity has rivalled Grinling Gibbons, but the result may be a very nightmare to anyone possessed of a keen decorative sense. Grinling Gibbons was you know carried off by his own skill. He made the wood to live. Its fibre throbbed with life till imitative life ran away with art and now the imitators of the imitator are in sorry plight.

I may frame my timbers up rudely and coarsely, but I may fulfil the finest mission of design as suited to materials carrying the tension and the thrust by well adjusted impact and suitably proportioned scantling. I may produce some delightful decorative carving so as to disguise or spoil the constructional truth of my furniture. But in either case I am not wholly damned. You might as well claim that the only right expression for the leg of a chair was a solid straight piece of stuff, and that any divergence from this in outline or thickness was a departure from the necessities of Truth and therefore to be avoided. But Truth calls a halt when the departure from the constructional needs creates an appearance of weakness which endangers stability. I have known sculptors who could not draw, painters to whom perspective was a mystery, architects who could not colour and doctors who could not be considerate.

The charm of life is in its variety of endowment, and the interest of art comes from endeavours which are always partial.

The most perfect art has been shown in carved panels by men who could not by any means design the building in which to use them, and the most able architect may be one who looks with envious and appreciative eyes at the artistic work of craftsmen who realise his dreams. The humblest craftsman about a building who expresses an artistic individuality in his work stands shoulder to shoulder in the firing line of our battle against ugliness and squalor, and he is my sincere comrade with the most accomplished architect of any time.

Let us believe that art is not here and not there, on this pedestal or that, aloof and alone. It is expressed in the Indian Taj, the Greek temple, and the English home. It is a mighty chain that goes round the world, and if you are sincere about it you are adding fresh links to this golden chain by the tasks of everyday life.

The continuity and universality of art are never properly realised, any more than are the facts about life itself. You call yourself John Smith and say you are twenty-two years old, but both facts are questionable. You call yourself John Smith and to-day Wednesday, but these are only terms of convenience. And as for your age, you are really a great deal older than was the John Smith who was born in 1510, because those 400 extra years have endowed you with a knowledge, a possibility, and an age that the sixteenth century John Smith did not possess, so that at twenty-two you are much older than he was at the same age. This progress and development and this accumulation of influences are still going on, and every day of our life is

adding to them. Can you imagine the effect that the yearly rush round Europe by cultivated Americans is having on their life and their art? I have seen reproduced in an American room all the sumptuous qualities of Renaissance art—costly marble, carved wood and stone, and gorgeous metal—all imported direct from Italy, and the fireplace opening surrounded by a gauged brick arch! What an oddity, that perhaps the puritan New England instinct should crop up and hold at bay all that fine Italian art!

Essentials of Truth.

There are many truths which are very sad, many that we long to forget, as, say a South Eastern railway station. But when we speak of Truth we must not blind ourselves to what we mean. Suppose a man carrying a sheet of zinc along the street provides a subject for two painters. One of these sets forth the zinc as a beauty of light and colour which under certain conditions he really sees. The other paints it as dull dead zinc because he will uphold the truth as he knows it is. As artists both have truth before them, and if you want the truth to be plainly told, that the man is carrying a sheet of zinc, your artist who paints its reflected light and charm has given you a truthful vision as he saw it, but not the mere truth of fact, if fact you want. But if the ugly truths of fact are told by an artist in his painting he is not therefore creating beauty as a consequence. The essential truth about a Don Quixote may not be that he is making a fool of himself, but that he is wholeheartedly tilting against evil and wrong-doing. The essential truth about a Gothic cathedral may not be that it is a barbaric art (as a professor of architecture has assured me) but that it is a glorification of a religious belief which inspired craftsmen to work and nobles to spend for the furtherance of a great creed. The beauty which arose was largely by the way, instinctive, natural, and simple. The crude figures in the niches of Gothic churches were the live expression of something really felt and not pretended. Build a similar church to-day, and the thoughts that inspire it and the hands that toil on it are not likely to have that simple faith and reverence which created wonders 500 years ago.

Truth in Craftsmanship.

The Truth to express in craftsmanship may be considered in various ways. There is the truthful expression of the material so that wood may be obviously wood, and marble, iron, plaster, stone and glass each clearly seen as such. Then there is the truth of strength, endurance and suitability to position and use. We may show wood clearly as wood, but use it where it cannot and does not carry out its apparent purpose of support. We may use iron where it truthfully does its work, but disguise it as material of another sort. Truth in architectural design is continually lost sight of. We cover over iron girders with plaster and show them as though they were plaster beams, or we case them in with oak as though they were made of wood. We build up our structures with elaborate framing of steel, and face them over with a sham frontage of stone or brick—we reinforce our concrete with metal bars, and produce a material which cannot be expressed with any real truth. The simple truthfulness of brick walls and arches, of oak framing, of solid walls of stone such as we had in earlier times has to make way for the economical or safer methods of cemented fronts or cased-in steel. With the development of the iron and steel industries, the demands of insurance companies, and the general hurry and bustle of recent times, we have been obliged to ignore the claims of truth. Our shop fronts are reared above walls of glass, and our great commercial buildings represent the fullest fraud of architectural art. Our great stone columns with massive architrave and cornice are only a make-believe of something we once thought good and cannot find a substitute for; our granite columns conceal a shaft of steel, and our mighty lintels are mere slabs laid on to the girder's flange.

Truth in Design.

The Truth as to design is so diluted through opinion that the result is ludicrous. If you were to accept the dictum of one architect you would have to wipe out everything we have done since the Tudor period, whilst another would clean out all the record before the Renaissance set in. You could easily find another to wipe out the rest—if there were any! A capable critic was asked the other day which he considered the ugliest building in London, and without hesitation he answered, "St. Paul's Cathedral." I never heard of anyone who has said the same of Westminster Abbey, but I can quite believe it possible.

We are not obliged to be artistic, but we must be truthful. None of us are—completely. Let us hope we all want to be or think we are. The most elevating devotion the world has ever known has been in behalf of truth, and it should lie at the root of all our efforts in life, whether they be practical or artistic.

When we come to talk about truth in art we must try to understand what we mean. An able architect has told me that he views with complete satisfaction a beam which is composed of a steel girder cased in and hidden from view by wood or plaster, because, says he, there is no deception about it—you know the steel is inside. Well, you may say this sounds sophistical, but there are many points in building matters like this. Take the latest development of ferro-concrete. How are you to obtain a truthful and artistic expression of it in building? How can you give expression to that part which you cannot see? The metal bars or rods without which the whole would collapse can have no definite expression outside the skin of concrete with which they are clothed. Some years ago we fancied we were going to build up a lot of truth in fully displayed stanchions and girders, we were going to have great artistic pleasure in cast iron fronts, but we had to come to the conclusion that they wouldn't stand fire! There is nothing objectionable in the great girders and stanchions and brackets of an iron bridge or viaduct, if the lines of construction are considered with some definite appreciation of the beauty which may exist even in great engineering works, and often enough you may see far more beautiful results in the simple and unadorned railway bridges near a railway station than in the so-called ornamental iron roof of the station itself. You can study this comparison any day at Clapham Junction. It is easy to make basket work expressive of truth and art, or to make wrought-iron work both truthful and artistic, but ferro-concrete—well! no one has shown us yet.

Consider a solid oak post, say eight or ten inches in diameter. It will be truthful and beautiful—but it will probably split. But if we build it up in sections say in six or eight pieces placed upright and dovetailed together we get truth, in a perhaps modified form, which is far more satisfactory because it is not likely to split as would the solid round post. The framed post looks solid but isn't, the solid one looks solid until it cracks. So the appearance of truth may be better than truth itself. But there is an everlasting bed-rock of truth if we will seek it, and it is on that we ought to build.

Truth as to Materials.

But the worst of falsehoods in architectural art we always understand to be the pretence of one material being another. There is no reason why we should not aim to get the colour of a beautiful marble if only we don't pretend it is marble, and there can be no harm in using an oak stain for its excellent colour if we are not going to use artifice to make deal look like oak. Surely it is not well to pretend we are supporting a great load on a round oak pillar if it is obvious we could not do it, and that there is obviously a steel stanchion inside. In such a case we have neither truth nor the appearance of truth. Thus are we thrown back on a device like reinforced concrete, for the truth of that lies in the fact that the outer surface which we see does a necessary part in the work of construction (without which the metal would not do), and though we cannot express the metal within we must assume from our knowledge of the facts of construction that it is there.

But the truthful treatment of materials we may all realise with little thought. The false treatment of materials covers a wide range. Stone is constantly being treated as wood, pot as metal and metal as pot. Marble is treated as stone blocks instead of as slabs, cast iron as wrought, and wrought as cast. Soft stone is treated as only hard should be, and *vice versa*. Terra-cotta is treated as stone instead of as brick, cement as stone, and in some of the cleverest modern internal architectural work you will find stone forms translated into plaster. This latter is a frequent fault, and one to be much deprecated. If you cannot afford stone, but only plaster, you should have a treatment which is suited to the latter material, and which gives possibilities of beautiful and characteristic modelling. The illogical and false treatment of material is a constant and glaring evil in modern art.

Ironwork.

It may seem unnecessary to say again what has been so often said before as to the use of materials with proper thoughts of their nature and value, whether for use or art. Cast-iron, which is actually used as a term of reproach, is one of the most beautiful materials when properly employed, and there has never been any more delightful and beautiful use of it than the dainty low-relief decorative forms in which it has been produced from the designs of the late Mr. Thomas Jekyll by Messrs. Barnard, Bishops & Barnard of Norwich. It seems to me that cast-iron is needlessly under a cloud just now. Considering what it is capable of for permanent and beautiful decoration it is not half enough used.

Wrought-iron work has had many revivals in recent years, and yet one hardly knows where to go for the work of an earnest and artistic workman who supplies the public direct. How is

it that as an outcome of all the wonderful modern revival of this beautiful craft there have not sprung up in many of our villages capable artistic workmen who can earn a high wage in an independent position? We shall never get the most and best out of our materials without the fullest possible realisation of their qualities. Are not the words of a writer and thinker like Mr. Starkie Gardner on the subject of ironwork a stimulus towards this end? Hear what he says about iron: "As if to heap all its favours on a favourite child among metals, nature has specially endowed it with two extraordinary properties, wholly peculiar to itself and shared by no other metal, which enormously increase its practical value and utility. One is that an infinite number of separate pieces can be perfectly joined together into a whole without being raised to the melting point (as all other metals have to be) merely by heating and beating, without visible joints, by a process called 'welding.' The other is that its already great strength, tenacity, and hardness can be prodigiously increased or modified by tempering, repeated quenching while hot in oil or water; or still more profoundly by causing it to absorb an infinitesimal percentage of carbon into its mass, when its resisting power is increased to such an extraordinary degree as to have merited a distinct designation—steel, borrowed from a Dutch word 'staal.' The results are so important that had gold itself been needed as the alloy it must have been sacrificed. Nor have these unique properties been conferred at the expense of any others of value. Iron shares ductility, malleability, fusibility with the much more expensive metals. That is to say that everything that can be made of gold, silver, copper, tin, or lead, can also be made of iron. In fact, iron can be cast, carved, chased, hammered, rolled, pressed, punched, embossed, stamped, inlaid, polished, planed, filed, drilled, drawn and twisted. In addition to all these possibilities, which, whether realised and utilised or not, have been inherent to iron for all time, the modern smith enjoys the advantage of buying his iron in a vast variety of sections, ready refined, and to a great extent tempered ready for use. Every needful thickness of plate or sheet iron, bars, round, square, or oblong, of all required dimensions, and of several qualities, are delivered at his door, and an immense expenditure of time, skill and patience is saved to him. The heaviest part of the smith's task is now accomplished before he strikes a blow. On the other hand, this has not been brought about without great losses to him. The modern smith, estimable as he is, can never resume the position of his ancestors. His staples were so numerous formerly that he was wholly independent of architects and fashions, and good times or bad were all one. The community depended on him for armour, weapons, locks, chains, bolts, bars, tools, nails, ploughs, implements, shovels and tongs, pots and pans, spurs, snaffles, stirrups, bits and horse-shoes. He now enjoys but a small fraction of the craft of his predecessors, and when the fashion sets in among architects to use cast iron, or no decorative iron at all, smiths have to swell the ranks of the unemployed like their fellow craftsmen when builders are slack."

When you have come to understand and appreciate your materials like that you ought to know how to treat them.

After all that panegyric you may remember that you can build a house without one bit of all the before-named beautiful craft in iron!

Plastering.

Take another craft, that of plastering. I do not know that we have had anyone in recent times who has devoted himself so completely to its artistic expression as Mr. Bankart. When you hear what he says about it you feel that he is one well qualified to speak. "The commonness of the material, and the ease with which it is handled are mainly responsible for the contempt with which it has been treated in the last 100 years. The material such as it is combines extreme ease of manipulation with great durability. To no others do the associations of our daily life cling more closely than that with which the walls and ceilings of our homesteads are covered. It is intensely sympathetic, intensely susceptible to every touch received from the hand of the workman. It can be modelled, cast, incised, coloured, stencilled or stamped with equal freedom, from the size of a cameo to the vastness of a dome. It may be set as a jewel or it may be applied to the facade of a palace. It can be coarse or fine, either malleable or the reverse. The past use of so homely a material, once worthy of the best efforts of many of the greatest artists the world has produced, gives hope and belief that plaster may again become the medium of decorative expression in the hands of men of education, refinement and ability to understand and use it up to the possibilities and limitations of the material."

I feel so strongly as to the possibilities of beautiful plaster work that I must say a few words about it. You all know of course the simple and effective work in exterior plaster decoration which you see on old cottages, and which was so often done by the local mason, who modelled it up with his trowel on the wall,

or it might be scratched in with a fan of pointed sticks, or pressed canvas against it to produce a sort of herring bone texture, or stamped it with templates. Much beautiful work of a very simple kind was also done inside cottages; not cottages which had been cut down from manor houses, but homes for people with similar incomes to those who crowd Bermondsey or Ilford or Lambeth. Now why cannot we have some of this simple and effective work again? There are several reasons doubtless, but one of them is that we are taking all our ornament from the shop, the factory, and the agent. We are not getting it direct from the workman himself.

Why cannot we get a working plasterer to do decorative work himself? He has the easiest of all media in the world to work in. Working in plaster would come as easily and naturally for artistic expression as writing or drawing or reading or singing. Try yourself in that capital stuff; Harbutt's plasticine. It is perfectly amazing and delightful how sensitive and yet how firm it is to the slightest touch. How delightful it would be if we could have plaster ceilings or friezes done by direct handwork in such a material as this.

Mr. Bankart says you couldn't work about in the lime plaster of to-day because it would burn your fingers off, but you could have done it 200 years ago. Then you had old lime slaked for perhaps twenty years. That old stuff was mixed with sand, road scrapings, lime, cow-dung, hair and straw, and such a mixture worked fat and sound. An old man told Professor Lethaby that he remembers old stuff like this, and that it worked like leather. But whilst we lack the right stuff we also lack the right incentive.

To me it seems monstrous that each man should not be free to make the most of his abilities for his own good. But the British workman is not allowed so great a boon. He is defended by trades unions from the oppression he might suffer from employers of labour, and rightly too. He will soon I hope be regarded as real a unit of the world's life as the millionaire. If he works hard, is honest and industrious, and does his best for his family and friends he deserves a full and equal vote with the plutocrat, whatever may be his funds and his possessions. But the trades union limits the workman in his output and pay and in the kind of work he is allowed to do. A bricklayer or a joiner is not allowed to be a labourer—not for a moment—even to save his employer's pocket. He is not allowed to give the best that is in him and get full value for it. He is degraded to the level of an average which the small amount of the highest skill does not make very high. Is this fair? Is it reasonable, whilst striving rightly for the greatest good for the greatest number, that we should strike at the root of all individual freedom in this way? I would like to see an ordinary working plasterer trying his hand at simple frieze ornament or simple panels which we could use in our small houses and cottages. The fine art which has been expressed by men like Mr. Bankart is out of reach of many, but the working plasterer could give us poor folk something to relieve the monotony of our dull walls, and in doing so, I venture to believe, also something of the monotony of his own life. But you see a working plasterer and a modeller are two different things, and you can't be both. The union doesn't permit—I wonder they don't interfere with our games, and make us choose between cricket and football! The divorce between the working plasterer and the modeller is a great mistake. When one realises the beauty of simple ornament one feels there ought to be some way by which an ordinary working plasterer might be able to produce it for us, and increase considerably his weekly wage. I wish the Art Workers' Guild, which includes so many earnest and able men, would try to bring this about—the development of simple truthful art by the workman himself.

Basket-work.

If you have any doubts as to the value of basket-making you should listen to Mr. T. Okey, who says: "The basket-maker in primitive communities has a wide range of activity. He is the house builder, the military engineer, the boat builder, the maker of innumerable domestic utensils. Even now he is with us from the cradle to the grave; he makes the first receptacle wherein we are rocked to sleep, and in some cases the houses wherein we take our last sleep of all. The craft is not only important in itself, but has been the cause of greatness in other crafts. It was the parent of all the textile arts, for basket-work is literally a weaving process. The willow pattern in old china, the basket capitals and braided mouldings in Byzantine architecture are derived from basket-work." Mr. Okey knows something as to the truth of craftsmanship in basket-work if anyone does. He says of art because we have lost the thing itself we make a fetish of the word.

He recalls how Dante in emphasising the degeneracy of the citizens of Florence says in olden times their blood ran pure even in the veins of the *ultima artista*—the commonest workman. Our *ultima artista* we perhaps consider the President of the Royal

Academy! Mr. Harrison Townshend has referred to basket-work as the oldest technical and craftsmanlike process in existence. Surely this delightful craft ought to be encouraged. The Basket-Makers' Company was not a bloated affair in 1851 when its income was only 10%, and there are only 130 freemen of the company now.

Woodwork and Carving.

It is not *necessary* for my aims to-night that I should be addressing carpenters. After all, carpentry, or art, or religious forms are not the essentials. Our humanity is the essential. But we can find and follow good ideals through carpentry or anything else. Carpentry is one of the best things in the world. An honest working carpenter (and I wish I had been one!) has one of the best chances in the world to be of use to his fellow creatures. If he does his work skilfully and well he is a benefactor to humanity.

There is nothing quite to equal the variety and beauty of that craft which this Worshipful Company represents and which it is doing so much for. From the simple and expressive bench in an old village inn to the gorgeous throne of a bishop in a mediæval cathedral there is a wealth of possibility in woodcraft enough to rouse the ambition of every carpenter who has a soul beyond his next meal.

If any carver to-day shows signal ability, his work is soon in great demand, and if we had a Grinling Gibbons he would, I believe, be very quickly dead under the stress of adulation he would receive. But we want something more than really fine imitative work, we want the life of the individual put into his work. As a mere matter of the handling and manipulation of tools why should not one carver please us by his swift and unerring sharpness and keenness of touch, another by his daintiness and sensitiveness of handling, another by his keen sense of texture and relations of plane surfaces, and another by his quaint deviations from mechanical accuracy? These are the things which create individuality in work, and which under proper systems of training ought to find proper expression and encouragement. I do not think I am raising false beliefs when I maintain that if we can get our workmen to cultivate their own powers and individuality to the full there will be a public ready to appreciate and pay well for it. If I knew of a dozen carvers who could give some individuality of artistic expression to their work, in simple ways, I should be tempted to run a business myself.

If I cannot teach you anything you do not already know I can at least tell you what I see in carved work myself. Some carving is to me noisy and boastful even though it may not be vulgar. Some is plainly and offensively vulgar. But some seems to have grown up out of the very life of the wood itself, just rippling up here and there with crispness and delicacy of detail, or softness and tenderness of modelling, just as musical cadences rise and fall, softly, tenderly or brilliantly sparkling out of the silence. Some rudely executed Jacobean carving which was the result of a little (a very little) knowledge of the work of Italian artists shows such a sense of decorativeness that the halting execution and roughness of handling only seem to lend quaintness and produce an interest far beyond some of the highly finished examples to which it owed its birth. Some of that fine Grinling Gibbons carving is decorative in the extreme, but you will find examples which indicate such dexterity of skill in dealing with the materials that almost impossible feats of delicacy and undercutting seem to be performed, and then you say the carver was showing off his skill, flaunting it at you, tearing a passion to tatters and so messing his decoration! It is astounding what a lot of moral qualities may be discovered in carving. If you are a swaggerer you can display it there very well, and if you are a refined and tender artist you can lay your mind open to the beholder of your work. It is not amiss to remember that our characters show in our work and that such men as Sir Anthony Vandyke and J. F. Millet put their own thoughts on to canvas. I once noted the brilliant painting of two girls which appeared to me one of the cruellest things I ever saw. They were portrayed in their vanity and empty bombast just as the clever painter saw them, and he painted them for guineas; if he had loved them he would have done it differently. If he had been less anxious to shine in the way he knew it would pay best, perhaps he would have done better, but Israels or Millet could not have painted anyone like that.

I will now show you some slides which will indicate contrasts as to the illustration of facts, and emphasise the qualities of truthfulness and the reverse. The first exemplify the beauty of craftsmanship in wood, plaster, stone, marble, basket-work, &c. The last explain the essential difference between the truth as portrayed by the camera and the hand of the artist.*

I have shown you some illustrations of Truth as seen in various ways. I have made no attempt to do what several able lecturers are doing for you in carefully defining the technical truths of various crafts.

I have been trying to fix our thoughts on the first principles in which good craftsmanship and all good things take root. Without firm faith in truth and broad sympathy and wide outlook on life I do not believe any great art can be.

The essential truths of life have not to do with clothes or food or art or craft. You must think of man apart from his coat, the purpose of food apart from the taste, the inspiration of the art as well as the execution. There is still no greater watchword for our lives than Shakespeare gave on truth. "To thine own self be true, thou canst not then be false to any man." This cuts at the root of all affectation and deceit. It means you do no benefit to yourself or any other by pretending to admire what you really do not, by following any art you do not care for, by leading a life you loathe, or conforming to conventions you despise. You cannot take admiration or pleasure second-hand, you must be true to your belief to possess the one or the other.

If you grain deal to pretend it is oak, if you enamel slate to call it marble, if you cement and line up your brick walls to pretend they are stone, if you paper your bath-room to look like tiles, if you veneer iron columns to look like marble, if you make-believe that a poor material is a good one, you are telling lies. There are many less obvious ways of being untrue, and some so subtle that the only real dread to many people will not be realised—that they will be found out! But there are clever people who will persuade you by careful argument that it seldom pays to tell the truth and quite as seldom to act it either. When so many of our modern buildings are obvious lies, when the real constructive necessities are so completely disguised and a make-believe set up in their places, it might seem hard to talk or think of truth.

Still truth lives. It is the sun which will shine in our sky for ever.

"Truth is tough. It will not break, like a bubble, at a touch; nay, you may kick it about all day like a football, and it will be round and full at evening. Truth gets well if she is run over by a locomotive, while error dies of lockjaw if she scratches her finger."

Why are people lost in admiration over a piece of work produced with infinite difficulty for lack of proper tools, something which looks as though it had needed many tools, but had none? Why do they stand agape at the model of a church, the existence of which is explained on the label as "perseverance, cork, and glue, 1872"? Why do they not look with admiration on a fine piece of joinery finely put together, as a workmanlike expression of right tools rightly handled? What we should admire in craftsmanship is the true and workmanlike expression of the tools that are used, be they few or many. If I scratch plaster with my hands and make a decoration such as is better got so than any other way I am doing a workmanlike work. If by pressing a hair-pin into wet plaster I get a mark that nothing else gives so well, or is used so readily, I am doing the right thing. If I am going to decorate brass and have no block and nothing but a hammer and a bolt out of an old railway sleeper by way of chisel, I must do that which can be simply and expressly rendered so, and deserve no thanks if I am doing only what could be done better by better tools. It is not truth to copy a stencil pattern freehand when to use the stencil would be best. We like the texture of rough plaster and simple ornament, easily got by simple tools, or no tools at all, because we want it for simple buildings and it must be cheap. But we don't want this for mansions or town halls. Mr. Day once said: "It would seem as if every success in decorative art depended to some extent on restricting circumstances." There is the whole point. If the limit, the restriction, is a truth—if it is real—it ought to affect the result. Anything and everything but Affectation. Not pretence of hard stone if we have only soft plaster, stucco bursting to look like stone, marble done into flounces and frills. That is the eternal thing—the Truth. If you are a rogue, be an honest one; 'tis better to be an honest rogue than a roguish honest man. If a murderer, get it done and then be hanged. If you have a spark of courage in you, be Yourself.

The truthful and beautiful expression of craftsmanship is not yet a thing of common good in everyday life. We are yet lacking an everyday art, and we shall not get it till it comes as a natural, simple, and truthful expression of our desires. You go into a restaurant and find the table decorated with plants. The plants are alive; growing in red earthenware pots, nice in colour and texture, and decent in shape. But the craving for ornament must be satisfied. So they are placed in glazed pots which in colour, form and texture are abominable, or they are perhaps surrounded by a hideous pink paper frilling. Thus the problem is solved—how to conceal art for a halfpenny! I have just read a new book called "The Beautiful Necessity." Beauty neces-

* Here followed the exhibition of over sixty lantern slides.

sary? Alas! for our lamp-posts and railway stations, our common crockery and Piccadilly Circus!

‡ If we would fill our hearts with hope and sympathy for others trudging life's highway, if we would add to the pleasures of the world by making Use and Beauty join together, we must hold fast by Truth. We must not separate Art from Life, nor Life from Truth.

Truth, crushed to earth, shall rise again:

The eternal years of God are hers;

But error, wounded, writhes with pain,

And dies among his worshippers.

‡

W. C. BRYANT.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.

At a general meeting held at the Leeds Institute on Thursday, 26th inst., when Mr. Sydney D. Kitson, F.R.I.B.A., presided, Mr. J. J. Wood, A.R.I.B.A., of Leeds, read a paper on the "Guild of the Comacine Masters." Illustrating his discourse by means of appropriate slides the lecturer took a comprehensive survey of the extensive area over which the Guild exercised influence.

Always in league with the Church, it was not surprising to find that the most characteristic examples of the work of the Guild were of ecclesiastic nature; wherever Christianity had penetrated throughout the ruined Empire of Rome, there the Comacine Masters had left their mark on church architecture.

Vast as was the spread of their influence, affecting such widely separated districts as Lombardy, Sicily, Servia, Germany, France and Britain, yet the presence of one immense organisation offered the only explanation of the otherwise inexplicable similarity of contemporary architecture in such places.

For administrative purposes the Guild was divided into lodges, each lodge consisting of a school where the traditions of the various crafts were taught, the Laborerium or general workshop and the Opera or administrative office which constituted the link between the Guild and its patrons. Under a President or Grand Master, the Magistri or members of the governing body of the Guild organised the various works, while the Liberi Muratori—freemasons—carried out the different branches of its work.

From the coming of the Longobards to Northern Italy in the sixth century the Guild flourished until the dawn of the Renaissance, when probably owing to its unwieldiness it broke up.

The concluding portion of his paper Mr. Wood devoted to Comacine work in the British Isles, citing and illustrating such well-known examples of Saxon-Lombardic work as Earl's Barton Church, chapels at Bradford-on-Avon and Durham, and parts of churches at Sompting and Monkwearmouth, where either in characteristic tower, round arch, or type of ornamentation the work of the Comacine Guild was unmistakable, while in Ireland he believed the round towers owed their character as certainly as did the richly ornamented crosses to the same origin.

At the close Mr. Wood was accorded a hearty vote of thanks, on the motion of Mr. Douglas Bowman.

OUR CONTEMPORARIES FROM OVERSEAS.

The *American Architect* (New York) has given further illustrations of the work of Messrs. Cram, Goodhue & Ferguson, and a complete series with plans of the Hotel Rector, a skyscraper at the corner of Broadway and Forty-fourth Street, New York, of which Messrs. D. H. Burnham & Co. are the architects.

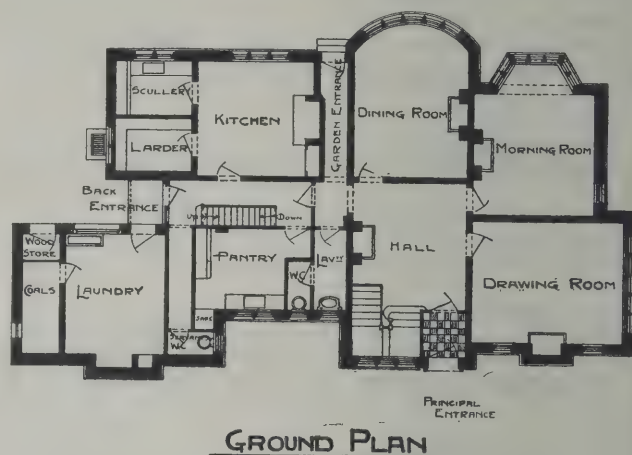
La Construction Moderne (Paris) illustrates pretty fully the fitting up of the shop or store of Messrs. Tiffany, the jewellers, in the Place de l'Opéra, Paris, of which Mons. C. Knight is the architect. This is a good example of sumptuous shop-fitting.

Stone (New York) gives a striking illustration of the interior of the choir and chancel of the new cathedral of St. John the Divine, New York. To our contemporary's score against concrete are this month added details of the failure of a great reinforced concrete oil tank near San Luis Obispo, California, which ought to have held a million barrels of oil but failed in the attempt. There is also the record of the complete destruction by fire of a concrete block church at Bridgeport, Connecticut.

ILLUSTRATIONS.

PYCHLEY HOUSE, ALLERTON PARK.

This house was recently erected on the Allerton Park Estate, a favourite suburb of the city of Leeds. It has a south aspect, and overlooks the well-wooded district of Gledhow. The lower portion is faced with specially made thin pressed bricks, the stone facings being of Cullingworth stone. The entrance hall, 22 feet 6 inches



by 14 feet 9 inches, is panelled in Austrian oak, the principal staircase also being formed of the same material. The architects were Messrs. THOS. AMBLER & SON, of Leeds.

TRAVELLING STUDENT'S SKETCHES.

We give reproductions of two more of Mr. WALSH's drawings, made during his tour as our Travelling Student last year.

INTERIORS BY MR. BAILLIE SCOTT AND MR. G. P. BANKART.

THESE views formed two of the illustrations of Mr. T. RAFFLES DAVISON's lecture at Carpenters' Hall on "Truth in Craftsmanship."

THE Middlesex County Council last week decided on the erection of a new Guildhall at Westminster at an estimated cost of 80,000l.

THE markets and plans and works committees of the Edinburgh Town Council recommend that an honorarium of 500l. be given to Mr. J. A. Williamson, the city superintendent of works, in connection with the erection of the new cattle markets and slaughter-houses at Gorgie.

THE Hull Hospitals Sub-Committee recommend the erection of a sanatorium on a site of about fifty or sixty acres of land within eight miles of the city. No particular site has been selected.

THE improvements committee of the London County Council recommend that the drawings submitted of the opera house proposed to be erected by Mr. Oscar Hammerstein in Kingsway be approved. The whole of the elevations to Kingsway and the greater portion of the return elevations to Sardinia Street and Portugal Street will be built in Portland stone, and the remainder in red brick with Portland stone dressings. Mr. Bertie Crewe is the architect.

THE Perth School Board have agreed to call in an assessor to settle the details of the proposed competition for a new academy to accommodate 750 pupils at a probable cost of 24,000l.

THE Visiting Committee of the County Boroughs of Swansea and Merthyr Tydfil invite applications for the post of architect in the proposed erection of a Joint Asylum near Swansea.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A MEETING of the Royal Institute was held on Monday last at Conduit Street, W., for the purpose of hearing the President's Address to students and a criticism of the drawings by Professor C. H. Reilly, and witnessing the presentation of prizes and studentships. The decess was announced of the following members: Mr. Andrew Murray (Fellow), Mr. A. C. Forrester (Fellow), and Mr. E. Skinner (Fellow). The following were declared elected as Fellows: Mr. A. W. Field, Mr. H. E. Budden, Mr. A. E. Corbett, Mr. A. E. Hughes and Mr. R. G. Kirkby. The election of Sir Richard Arthur Surtees Paget, Bt., to the rank of Honorary Associate was announced. Mr. Leonard Stokes, the president, stated that the Council of the Institute proposed to give the Royal Gold Medal this year to Dr. William Dörpfeld, F.S.A., Hon. Corresponding Member of the German Archaeological Institute, Athens. He also stated that the author of the drawings submitted under the *nom-de-plume* "Civitas" for the Soane Medallion and 100l., and which were awarded the first prize, having failed to comply with the conditions and having withdrawn, the Council have decided not to award the prize. The Godwin Bursary for the study of works of modern architecture abroad has been awarded to Mr. Cecil Brewer.

Mr. LEONARD STOKES then gave the following

Presidential Address.

One of the most exciting duties that falls to your President's lot to perform is this address to students, and if only he will rise to the occasion, or at least attempt to, there is ample opportunity for him to give himself away most completely. Perennial platitudes in, perhaps, fresh disguises are his usual stock-in-trade, and you will have many a hardy annual to put up with to-night, but I can think of nothing more entrancing than to be able to deliver a really fine address to students, the most critical and exacting of all audiences, though without doubt the most appreciative.

In my opinion, however, a student alone can rouse a student. Of course, I know we are all students—(platitude No. 1)—but a student with the fire of youth running in his veins is the student that you would love to listen to, and not to such a one as I, trammelled with the chains of office and hampered by the dignity of the Chair, afraid lest I should say too much and yet ashamed to hold my tongue; duty, however, demands that I should speak, so speak I must.

Of course, you know that even the youngest of us may make mistakes, but such mistakes are simple little howlers which often set one thinking, and not the dull and heavy article produced by a president well over fifty. For this reason, therefore, I have a proposal to make to you, and it is that next year, if I am still in this Chair, the student under thirty years of age who can write the best address to his fellow-students shall read it to them, and have, into the bargain, say, twenty guineas for his trouble, and if the Council does not see its way to vote the money, I will guarantee that he gets it somehow. For his subject—if he wills it—he can remodel the Royal Institute of British Architects, and play any tricks he likes with it, and all its works and pomps. Further, I should like to suggest that the judges in this competition be under thirty years also, if that is not going too far, but perhaps you will leave this matter also to the Council and to me.

Having provided you with an address for next year does not fill up the gap to-night. You will have gathered already, however, that I am all on the side of youth; young ideas and young ways of expressing them are what I envy, the light touch of youth, so full of promise, so full of life, of vigour and vitality, is worth a great deal in all forms of art; in fact, without it what should be a thing of interest becomes an object to deplore, and what should be a thing of beauty is often very far from it.

Cultivate youth then, keep it green as long as you can, and water it well from the springs of learning, for study you must, and study hard too, if ever you hope to make yourselves felt in your generation.

I am aware that there are many modes of study, and the form that suits one may not do for another, but in one way or another you must put your young shoulders to the wheel. Do not, however, try to be too clever and artistic—with a capital A—for nothing is worse than apparent effort in design. The simple, direct, and restrained, even if it does not catch the eye of the assessor, will do you more good to have achieved than half a dozen flashy productions even if they get you the same number of commissions. Do not be in too great a hurry with your work or too anxious to get it, but go steady, and never put your name to anything that is not of your very best; also remember that it is often just as important to know what to leave out of a design as it is to know what to put in, and that the one thing of all others to be careful about is pro-

portion. The study of light and shade—a good stock phrase—is, I know, recommended by the faculty, but we have in our country so little light and so much shade, that this fact alone should make us ten times more careful with our proportions.

In my youth, I fear, I never had a good grounding in those delicious rules which give the right proportions for making everything, and I am unorthodox enough, I fear, not to be a great believer in this rule-ridden type of learning; rather would I trust to the eye and its power of judging each individual case, than to the efficiency of a rule which probably has been adduced from quite a different set of circumstances; what looks right in one case would be quite out of place in another, and although a rule may be all very well "to take off from," the sooner we get clear of it the better. Always provided—as the lawyers say—that we have trained our eyes and our judgment to do their duty properly. Ten times this may make a that, and perhaps it has done so a good many times, but there must be all sorts of exceptions to rules of this sort, and I think that at best such rules are apt to give us commonplace and lifeless results; and I venture to maintain that architecture at its best is not built up of rules, but rather of rhyme and reason. So whatever you do, *think for yourselves*. I do not for a moment suggest that you should try and be "original." Heaven forbid. But I do maintain that you should be always thoughtful and very careful. Please do not think that I want you to disregard what has been done in the past, for ours is a traditional art, and we must draw largely on the past if we hope to do better in the future. We should, however, use past examples intelligently and not blindly, even when we design on academic lines.

This brings me to a rather serious consideration. I refer to the sad lack of a sound grounding in our students generally. I know architecture is a difficult thing to teach, as in our days it is such a comprehensive matter, but I am afraid that a smattering of a great many subjects is of no real use to an architect, unless such smattering is in addition to a real solid grounding in the "three R's" of our calling. Its reading, writing, and arithmetic should not be hard to define or teach thoroughly and methodically, but although architecture is such an important study, and though architects belong to such a great and glorious profession, there is very little to guide us as to the best method of producing the finished article from the raw material at our disposal. Our public schools only teach a very little drawing, and our universities are only just beginning to open their eyes to the fact that our profession exists at all; and we ourselves are not too clear on the matter of the best course to adopt. And yet, in spite of all this, we can produce the splendid show you see on the walls to-night, of which I think we may well be proud, and we should not overlook the fact that this is the first time, in recent years, at any rate, that we have been able to exhibit our students' work in our meeting room and listen to a critical description of the work with the advantage of seeing at the same time the work so commented upon.

And now I should like to say a word or two to the prize-winners, as I have so many before me, swelling no doubt with pride, and pluming themselves in the sunshine of success. I would say to these—*beware!* Many a good man has done the same before, and never been heard of since; and the fact of your having got a prize to-day is only one more reason why you should work hard again to-morrow. It shows that you may be a man of parts, but what do we learn from men of parts in other callings? In the world of sport does the man who wins his heat to-day go on the spree, or does he train all the harder for the final struggle? You probably know the answer much better than I do. Skill of various kinds requires very careful handling, and I do not think that architectural skill is any exception. All work and no play does, no doubt, make a dull boy, but the duller man one can possibly meet is the self-satisfied prig, too conceited to learn, and too proud to keep himself in practice in the little that he really does know. I think I could prove to you from statistics that prizewinners do not by any means always become successful architects, but I have too many old friends amongst this class to make it worth while running the risk of making almost as many enemies by so doing, so I will only suggest that you should study the lists for yourselves and ponder well on your own conclusions.

Another pitfall is that travelling students often make poor use of their opportunities when travelling, and either go to the wrong places or spend their time in studying the wrong subjects. To guard against this the Records Committee is prepared to advise students where to go and what to do before they start on their travels, so I recommend you to take advantage of this offer, and at once place yourselves in communication with our Secretary.

Having cautioned the winners thus somewhat ruthlessly,

I should like to say a word of consolation to those who have not been placed. You, at any rate, have escaped the awful risks which stare the winners in the face, and if you have any grit you will not take your licking lying down. The line which divides a winning design from a losing one is often a very fine one indeed, and the very fact of having competed, and the spirit in which the result is taken, is what does the real good, and not the mere winning of the prize. So there is hope for all, including even the winners—perhaps; for study and hard work will turn the students of to-day into the Institute of to-morrow, and I trust that whether at work or at play you will not forget this Institute, which really does a great deal for students. In your turn, therefore, you must always do what you can to help it, and when you all have seats on the Council, and come in time to occupy this chair, you will be proud of the old ship and of what you have done to help to keep it afloat. You will also make and cement many a friendship in so doing, and friendships are after all very delightful and useful things to make and to have. Personally—though I do not hold myself up by any means as a model—I believe I have learned far more from my fellow-students and friends than I ever did from my teachers and masters. If you happen across a genius cultivate him, therefore, for all you are worth, that is if you do not happen to be one yourself. For the genius is a wonderful creation who has been defined in various ways, but as he is generally abnormally developed in his own particular sphere, a cutting taken from him will not be missed, will often flourish and produce fine results in the common or garden kind of students, just as a sprig cut from a fine apple-tree will produce wonders if grafted on to the common crab. The genius in his turn will derive benefit from his more plodding and business-like friend who may often suggest ways of turning talents to account which might otherwise have escaped his poetic notice.

I do not think we hear quite so much of crafts and draughtsmanship now as we used to, and probably for the reason that we have steadied down somewhat, and now recognise that architecture after all is itself quite enough of a craft to demand our whole attention. It is not necessary to be a brick-layer in order to grasp the limitations and proper principles of brick design, but it is necessary to know the size and shape of a brick before we can get very far on the architectural high road, and yet I have known young men in my time—otherwise very capable assistants!—who could not tell me the size of a brick. In other trades the same thing applies, and there is a vast amount to learn about them, so if we like to take up a trade or two as a hobby we shall no doubt largely benefit. But as we have to do with all trades it is obvious that general and intelligent observation, combined with reading and lectures, can be about the extent of our mastery of so many subjects. Drawing is our mode of expression in our type of craft, and we shall find it very useful to be able to draw accurately and intelligibly.

Perhaps I have now said enough to show you that a student's life is not altogether a bed of roses; but it can be a very happy one nevertheless if only he takes a keen, intelligent interest in his work. As I ventured to point out in my opening address, architecture is a great and honourable profession, and it should be upheld by a fine, honourable set of men. Play the game, therefore, strictly and straightforwardly; shun anything which in your own phraseology you would term "not cricket," whether in connection with your work or your desire to get it. An architect has a number of great and ever-increasing responsibilities, and his client has to place implicit trust in him, and this trust should never be abused in the very smallest degree, for although it may be a fine thing to be a great architect and produce a quantity of really fine work, yet who after all is more respected and admired by all than the simple, honest, straightforward and upright English gentleman?

(To be continued.)

THE ATELIER v. THE BUILDER'S YARD.*

(Concluded from last week.)

BUT though all architecture, large or small, is one craft, it seems to me we must appreciate that large, formal, ordered buildings demand a more rigid preliminary process in the mind of the architect than smaller work does. We in England have lost a tradition of academic style for large buildings. France has retained such a tradition, or at least built up a modern one of its own, but then in England we have a much surer hold on the whole intent and

meaning of smaller work, such as domestic and church buildings. Our best work in these directions is not imitative; it is really part of the national life. To design such work there is much to be said for the "cooking" process; but though ordinary *contrivance*, ingenuity, common sense, are the basis of all design, whether in large things or small, for the great buildings of modern times—our lecture theatres, town halls, art galleries, museums, libraries, flats, railway stations, important commercial buildings—all buildings that can be called monumental, we need, it seems to me, a basic principle, or principles, in our design, and the simplest way I can state it is this: In what way do we relate our processes of thought and draughtsmanship to the actual structure in the execution of large, ordered work? Now, if I may state my own answer, here we want the "atelier," but we want more; for the atelier, in these remarks, is only a symbol of modified, not comprehensive power. Nevertheless, we do want the root-principle of it, to my mind, and that alone which can make draughtsmanship the means that it ought to be. We want to begin with our subject at its beginning, to work from small to large, to visualise our subject as a whole, on paper, and to keep scale, proportion, mass, harmony, before us all the time. We want to work this out to its utmost possible achievement on paper before we touch anything to larger scale; and so pass on from this, and by means of this, to larger and yet larger, till we reach the "full-size," making innumerable studies—line perspectives, isometrics, diagrams—by the way. Now, this, it seems to me, is the true principle and meaning of draughtsmanship in monumental work, and the most certain process for securing good architecture. And the "more" that I have mentioned, what is it? Simply all that we have in our life—the utmost extent to which our character can inform our work. We all know how, after seeing a great picture exhibition, entering some rooms simply irritates us, and entering others pleases and rests. That is just illustrative of character in work, the power that can be gained by one man "thinking back," as Professor Pite says, so that he can truly bring forward.

And so, recognising that the architect, to be capable of tackling big work, must appreciate the big things as well as all the little things, is it reasonable to expect that he should devote such individual attention to these little things? Here I would not be misunderstood. Far be it from me to suggest that I call anything little, except relatively. The bigger meaning of it all, which is its right relationship to the whole, must all be understood, or at least intelligently grasped; otherwise there could be no Opera House. The multitude of practical details must be studied thoroughly and criticised with that larger view which is only possible to the impartial mind. Such study will become easier as time goes on, and it can be achieved without the drastic method of apprenticing oneself to a mason. Nay, can it even be properly achieved at all by such a method? That, of course, depends upon the man, but should it be necessary to make it a main plank in our platform?

Let us take three great buildings of the past at random, but representative of great periods in building; say, the Parthenon at Athens, Sancta Sophia at Constantinople, and the Farnese Palace at Rome. The two first of these, thanks to the immense value of a traditional style, might have been *contrived* in the sense meant by Professor Lethaby, though each of them is associated with a great master-builder.

The Farnese Palace could assuredly not have been so contrived. Begun by San Gallo, it was seized by the giant hand of Michel Angelo and reshaped to his embodying. I do not ask you to argue whether or not it has the same intrinsic purity of style that the other examples I have quoted possess. I simply ask you if it is not a noble building? And, since then, has any great building been erected in Europe without one informing mind behind it? This is a lesson that history teaches us, and that we cannot surely ignore? Since then the times have become more and more complex. The days move with breathless haste. Can we afford, as architects, to lose our grasp on the bigger sway? I would not argue for a moment that we should not throw our students as much into the builder's yard as possible. With that part of Mr. Schultz's paper I am entirely in agreement. But does all history, all experience, teach us that harking back to something which has its roots buried in the beginnings of things will be to our advantage? We may bemoan our lack of the sheer wonder in creative building attained by some of the older men, but the remedy must surely be with ourselves, and not with others. There are those among us who are always bewailing the lack of architectural intelligence in the public. To such I would say, "Don't think so much about other people's short-

* A paper read at the last meeting of the Architectural Association.

comings; think more about your own." The public appreciation of architecture is exactly what we architects care to make it. We, and we alone, have to be chiefly responsible for showing the public—whose needs are in the main intelligible, reasonable, and in the majority of cases, absolutely practical—that the best building it can get is the most artistic building, because it is the fittest for its purpose. I believe this can be done if the architect will but put his shoulder to the wheel.

Mr. ARTHUR KEEN, before calling on Mr. Curtis Green to open the discussion, said that Mr. Fyfe had dealt with his subject on comprehensive lines. If he understood the paper aright the method of training advocated was that actually in operation at the Association schools and which has been shown to be sound, practical and useful. It had been suggested that at some of the recent discussions in that room, the speakers had wandered very much from the question at issue. It was to be hoped an effort would be made that evening to keep closely to the point. What they had to discuss was the question that having regard to the conditions of the day and the demand for something constructionally well-arranged and well-designed, which is the right method to follow—shall they be taught by academic methods to deal with building through the art of architecture, or shall they be allowed to approach that art through the process known as building?

Mr. W. CURTIS GREEN in opening the discussion said: I have listened with pleasure to Mr. Fyfe's paper. Mr. Fyfe speaks with an authority and with a seriousness of purpose that reveal the born architect. I could wish for the purpose of discussion to-night his partisanship for the atelier had been more pronounced, that, in short, his statement was less nicely balanced and less likely to appeal to us all. Now that the best men among us are giving to education the attention that it deserves, when each of us is trying to attain the efficiency and skill which we admire in our friends or in those on a pedestal beyond our reach, it is well to reflect that, though the system is much it is by no means everything. Those who start life from a pedestal do not always build better than those who have to lay the foundation before they can start building themselves. If it is true that architects are born and not made, it is equally true that they are not born ready-made. It is more than probable that clear thinking will evolve in the near future a system of education that will make some of us regret our own lack of opportunity. But in the end it is the men that matter more than the system; we need the system to raise the whole general average of building throughout the country on to a higher plane; even then it is the full man in whom the root of the matter is planted, who will, whatever his initial mistakes and failures, express in architectural terms the virtue of his time. All of us will be agreed that many of our failures could be avoided by more prolonged training; we are in too much hurry to run into active practice either for financial reasons or because we are afraid that our friends will not wait for us. Should this additional training be in the atelier or in the builder's yard? In practice the architect must have experienced something of both. So far as the two represent two different schools of thought, I am to-night on the side of the builder's yard. The two schools may, I think, be fairly described as the *real* and the *ideal*; the real standing for the workshop and the ideal for the studio. I believe that at the present, and for some time to come, our art can be best served from the humbler side. The *realist* argues from nature upwards; starting from reality and never losing sight of it. The *idealist* argues from an idea already formed; starting from a conception, he argues downwards, rejecting realities where they do not fit in to his preconceived scheme. The *idealist* has the more lofty pretensions. The *realist* achieves the most elevating results. We architects have to look at things as they are, not through the mists of fancy, nor with the eyes of an age now past. Let us regard our work from the point of view of those who will judge it after we are gone and forgotten. What is the standard by which they will judge? If the lines laid down by the architect are the outcome of inspired common sense, a cultivated sense of that line of economy which Emerson has so well described as the line of perfect beauty, if the materials used are suitable, the best of their kind rightly and fitly used and joined together, I can imagine that a building of our day may win something of the respect and affection from those who come after us that we feel for the work of our forbears. Some of us have yet to learn that half of the charm of the historic architecture of this country lies in the materials used and in the skill with which they were laid down. Take a mere brick wall as an illustration. Let him who supposes that he knows every-

thing necessary to produce a beautiful piece of walling try to do so—I do not mean with his own hands; supposing he failed to do so, he might then read Professor Pite's essay on brickwork in the first volume of "Building Construction" in the Architect's Library; let him learn all that is to be learned from that masterly monograph, then let him try again and compare the result with any good pieces of old work; let him analyse the result, and his own feelings! Academic architecture fails to win our affection, although it may and does inspire our unstinted admiration and respect. The reason of this is, I think, that the tendency in cold academic design is to overlook the human element in its production. Which moves us most profoundly, the art of the Colosseum at Rome, or the front of Rheims? Is it true that our modern methods of building are more akin to Pagan Rome than to Christian Rheims; is that resemblance an ideal to strive for? I believe that the weakness of modern English architecture lies with the producer rather than with the designer. The British working man is the stumbling-block in the path of our best architects. Through no fault of his own, his natural taste for sound craftsmanship has been perverted. He has had set before him the false standard of excellence created by machine labour applied to illegitimate ends. He has learned his lesson thoroughly. The subdivisions of his one-time craft evolved in factories and by trade unions have destroyed both the self-respect and the pleasure which he once derived from his craft. This evil does not imply that we should get back to this or that school or period, or that we should embrace the affectation of a revival remote from our ways of life and thought. I would remind those with a tendency to admire all things old to remember what Wm. Morris wrote, speaking of old buildings. He said, "If these buildings are beautiful now in their age, what must they have been when they were new?" To those who believe that the standard of craftsmanship is connected with the well-being of architecture, the detached and superior attitude of the atelier will hold little hope of the future. I am not of those who imagine that drudgery can be done away with; there must be drudgery in the making of every work of art; it is a necessary and a cleansing process. The man who cannot bear his share will produce nothing of value; yet I believe that the architecture that affects mankind most strongly for good has the minimum of drudgery, that it is produced by labour, inspired by a common tradition, emulating that tradition. Let us have a controlling mind. I should imagine that no great performance in architecture was ever without one; but the master workman must have sympathetic tools, keen to respond to his suggestion, not compelled by force or fear. Part of our calling—it should be a self-evident part—is to master our tools. Can the conditions in which our work is carried out be studied in the atelier? Can we influence or direct the man who crystallises our idea until we learn what he has to teach us about the genesis of that idea? Can we design rightly in materials the properties of which we do not understand and cannot learn from books? The whole question of the right and the wrong use of mechanical labour is for us to pronounce on; where can we learn about it but in the builder's yard? I suppose there has never been so much skill at the service of architecture as to-day. In the country it is extraordinary how quickly and with what pleasure the men on the job respond to the traditional ways of their crafts when they are allowed the chance. We want a living traditional school of modern architecture, and it is coming clothed and in its right mind; our architects must be craftsmen not with their own hands, though a thorough knowledge of the bench or the lathe in their youth will have done wonders for them, but in the sense that they must know that there is a right way of doing a piece of work and a proper use of the materials at hand. If during our student days we are trained to deal with the real things first, not standing aloof from the facts of life, we may come to express in concrete form the ideal to our fellow-men.

Mr. W. H. WARD said that as in the case of politics one is obliged to choose the lesser evil, so in the case of the matter under discussion one might choose the greater good. But one was not debarred from enjoying the advantages of both sides. It seemed to be agreed that tradition was a necessity. When people felt that all was not right in the architecture of their day the only thing was either to improve a little or go back a little. The only way in which nowadays it was possible to get into touch with tradition was through the atelier. The building industry is now so specialised that it would be impossible for a man to practise as an engineer, as a bricklayer, as a plumber, and all the other trades. Craftsmanship as described by Mr. Curtis Green was robbed of all its terrors. The effect of undiluted atelier training was seen in the small

villas of France which are nearly all ghastly failures, being either attempts to design on a monumental scale in miniature, or else they are some awful form of new art.

Mr. W. H. SETH-SMITH said he presumed that the purpose of a professional education was to teach architects how to make the best of their general education, and so to serve the community to the very best of their ability. Lacking both these sides of education a man must be greatly handicapped, and if he is a person of ordinary ability he is only fit for working in an office. A knowledge of history is essential for the formation of theory, and a man must go back and learn from the experience of his fellowmen in the past if he is to produce theories on which he can base his work. It would be absurd to ignore the importance of that past when looking for guiding principles as to the best way of training the young men of to-day. It was also of importance in a school like that of the Architectural Association that the students should feel that such principles had been thoroughly thrashed out and laid down with the greatest possible amount of care, and that their training would be of a kind to promote the best that was in them. Consequently the audience that evening should feel particularly indebted to Mr. Fyfe for taking up the subject and enabling them to discuss which of the two systems of education was the best. The pith of the matter seemed to lie in Mr. H. H. Statham's paper read a fortnight ago, which he founded on the words of Walter Pater concerning the spiritualities which lurk round architectural form. Mr. Statham had also emphasised the idea that there was magnificence and greatness in working out the architectural idea in plan and section and studying it in all kinds of ways. Mr. Seth-Smith went on to say he would like to differ warmly from Mr. Curtis Green's contention that the value of a lofty ideal was questionable. Unless there was such an ideal it would be impossible to attain very high; for the higher the ideal the greater will be the achievement. The ideal need not be an academic one. Nothing too bad could be said about the results of a purely academic course of instruction as exemplified in the French beaux-arts methods. Their smaller architecture was indeed a total failure. This was the more astonishing in view of the fact that the French were perhaps the most artistic people of Europe. They seemed to be trained in the grand style to the exclusion of smaller objects such as cottages and domestic architecture. Taking the opinion of the architects of the whole of Europe generally they are unanimous that our work up to monumental architecture is superior to that produced anywhere. There was need to supplement the instruction given with such success in smaller work by working on a larger scale, and by imparting training on the highly theoretical lines of a civil engineer. Would training in the workshop render an architect more competent to master the large problems of town-planning? He could not quite agree with what Mr. Fyfe had said in high praise of the Paris Opera House. An architect who had watched its erection had described it as a tissue of falsity in construction. Westminster Abbey and Westminster Cathedral seemed better to illustrate Mr. Fyfe's point. Mr. Seth-Smith said he did not think that he had ever seen a building carried out by a builder without any architectural training, that was entirely satisfactory from every point of view. It was difficult to say if men like Mr. T. G. Jackson and the late Mr. John Bentley would have achieved better work if they had had a workshop training. The moral of the paper seemed to be that they would. If a young architect had a year to spare it could not be spent better than in going through the builder's workshops, and they would be very pleased to get a pupil of that sort at a low premium. Architecture had very often been compared to a musical composition, and it was certainly true that a man need not be a master of every instrument in order to get beautiful results out of an orchestra.

Sir A. BRUMWELL THOMAS expressed surprise at finding so much gentleness between the two gentlemen who read the opening papers. Two points of view had been put forward, but they could hardly be described as antagonistic. A desire to find the best form of architectural training was general, and it seemed as if both points of view would have to be included. In his own opinion there was no question that the training of the architect of to-day should be academic. Mr. Fyfe had backed his argument by quoting from papers read in 1898 and 1900. But since that time much water had flowed under the bridge of education. The question of the atelier versus the builder's yard seemed now a little out of date. There existed unquestionably at the present time a very considerable agreement in favour of academic training. Up to a certain point in the history of architecture the master spirit had been a craftsman; but after then a different sort of man was required. With regard to the criticism of French

domestic work it seemed to him that it is now beginning to show a spirit worthy of admiration; though speaking generally, it does not come up to the English. Personally he had only come across one delightful small house. It was a perfectly charming example, and showed all the effect of the "beaux-arts" training in little. On inquiring the name of the architect he was informed that he was Monsieur John Belcher. The explanation of the fact that public opinion towards architecture was so much more consolidated in France than in this country seemed to be that across the Channel there is only one recognised consistent form of training, while here many different opinions exist among artists. The training of a French architect was a tremendous test from the artistic point of view. For the first two years it tests him whether he is an artist; then he studies science; then for the next two years all constructional science is left behind. In France the pupil commenced with the small "projet," not tackling the big lay-out till some time afterwards; and he is trained in design at once. In this country he is given a very great breadth of scholarship before he is called upon to design. What the future of architectural training may hold in this country is in the lap of the gods. There was no question that strong academic training will come into force. But it needs most careful consideration as to what change should be made in the training of architects.

Mr. LEWIS JACOB thought it was most difficult to take sides on the question. The test seemed to lie in the results produced by the two systems referred to. There were some architects who were "fair terrors" when in a builder's yard, with their ability to pick up any tool and show the men how to do their work. The result is no doubt that they get a most sound and substantial building; but not necessarily one remarkable for its artistic qualities. That exemplified the danger of relying too much on the one side in an architect's training. The faults of relying too much on the other have been shown in the French domestic work.

Mr. G. DRYSDALE complained that in England everything seemed to be a matter of taste. If there was a little more reason and a little less taste things would be better. The contrast between French and English domestic work was partly to be accounted for by difference in temperament. An Englishman when he goes into the country loves to be quiet. The Frenchman regards the country as a sort of desert. Here also we bring the country into our towns.

Mr. WALTER MILLARD confessed to having found fault at once with the title of the paper. He would rather have it expressed as, "The Atelier *cum* the Builder's Yard." Architectural educationalists wanted to know how to combine the best points of those two training-grounds. They were not to take without a grain of salt such picturesque sayings by Mr. Schultz as:—"I am not hopeful that a good general type of modern building will be seen until all we architects are abolished, swept away, root and branch." Another one to which the same remark applied was that quoted from Professor Lethaby that "Design is merely contrivance, the doing of work in an ordinary way, just like cooking." Architects certainly want knowledge to understand the first requirements of architecture. If one trade is mastered it is necessary (according to the builder's yard theory) to master all the trades, and all the tools of all the trades. This becomes rather a big order. What is hoped for in present-day students is that they will be led or driven or drilled or trained into an understanding of their profession. They must hope and pray that they would acquire insight into what has been done—insight allied to foresight. On foresight depends so largely the power to grasp problems and solve them by the aid of that second sight which is termed imagination.

Mr. H. P. G. MAULE said he would rather regret the reading of such a paper as Mr. Fyfe's were it not for the different utterances it had called forth. Mr. Fyfe no doubt really recognised the necessity for both sides of training, and if he had had practical experience in training he would have held that opinion still more strongly. The discussion of such a proposition as "The Atelier *versus* the Builder's Yard" was misleading and apt to produce harm. There must be an academic training and a practical training, a training in design and a training in the materials out of which design is built up. Consequently the paper had a false start. Every argument could be advanced in favour of a combination of the two. It was admitted that English domestic architecture ranked very high in the estimation of people in France, Germany, and America; English public architecture was not placed so high. But it should be borne in mind that the present system of architectural education had only been running a short time. It was well to analyse

the process by which good domestic work is brought about. If one took the careers of recently dead and of living architects it would be found that scarcely one of them could be called in the literal sense a skilled craftsman. But they probably had a very intimate knowledge of how the various processes were done. It is impossible to learn each trade; but surely part of an architect's training must consist in knowing sufficient of the processes of any trade to be able to design aright in the materials employed! Consequently in some part that training must be severely practical. A student must also have the training to design on an all-embracing scale. The all-important question was what form the combination of these two should take. We are, said Mr. Maule, as a nation very practical and far more successful by rule of thumb, unassisted by real science, than most other races. The average English student can be approached and interested most easily by treating a subject from its more humble and practical side; but the higher ideals need not in consequence be lost sight of. The whole art of the teacher consisted of holding up high ideals, and eventually to lead the student up to the big subject. The best is got out of him by approaching him from the material point of view. It was advisable to avoid the use of such an expression as "our training must be academic," because people were inclined to translate that adjective in a sense not meant. All catch-words and partisanship ought to be avoided also. Training should be regarded from a very broad and, so to speak, English basis—i.e., judging what is best for our purposes and best adapted for the English mind. In a great deal written about architectural training the point of view of the student is forgotten, and the educational method of approaching him is ignored. Nevertheless that human point of view must be adopted from the very first. The fact that our secondary education is on a wrong basis is lost sight of. We start with our students from a different point to that of America or France. If a commencement were made on a too academic or too advanced a plan, the hands of the clock would be put back and a check placed upon a great many satisfactory designers of everyday buildings. Mr. Maule concluded by urging that no vote should be taken on one side or the other, as there was a lot to be learnt from both the atelier and the builder's yard; furthermore, a great deal of ground had to be covered before it could be settled which was the best system for the education of architects.

Mr. D. A. FORSTER said if a vote was to be taken he would like to propose an amendment to the effect that both the atelier and the workshop were necessary if a perfect result is to be attained. It would be impossible for every architect to know all about trade tools. It seemed to him that good architecture must mean good building, and that if there is to be good building the architect must know how to use the materials. The actual design is only a means to an end; and that end is the production of buildings, not the production of designs.

M. P. CART DE LAFONTAINE compared the length of the period of training in France and England. At the Beaux-Arts a student commenced at eighteen years of age and continued until he was thirty.

Mr. GERALD C. HORSLEY recalled that twenty years ago the subject under discussion agitated the students of the time very much. He remembered being deeply concerned as to whether it was the right thing after pupilage to go into a builder's yard or into an office, or indeed whether it might not be the right thing never to enter into an office and to go into a builder's yard altogether. He asked a distinguished architect for guidance, and the architect said that if he had his time over again he would go into a builder's yard. A few of his (Mr. Horsley's) contemporaries decided not to set up an ordinary office with a brass plate, but to start work as architect-builders. This appeared to him an entirely unsound course to adopt, and he did not follow their example. Time would seem to have justified that course, because of those few, one has given up the profession of being a builder and has since worked as an architect on conventional lines. The others have not had a very wide range of work, and though what they have done is extremely interesting and beautiful, it has not led to a large quantity of work, and certainly not to work of any size or importance. The present-day student probably views this question in two lights. First he is deeply concerned as to the good of the art he is following and whether he is working on the right lines to further the interests of that art, and secondly he is concerned to know whether he is learning what he ought to learn. Most students now take the syllabus drawn up by the Board of Architectural Education as the basis of the direction of their work. But, said Mr. Horsley, that syllabus does not

go far enough. It only deals with the first four years of a student's training, and says nothing as to what he should do after. That omission partly accounted for the discussion that evening. There was no authoritative statement yet issued concerning the best way of combining the atelier and the builder's yard. Probably all agreed that a combination of the two was the right method. The absence of such a statement was a great drawback to students, and it was to be hoped the new statement due to appear shortly from the new Board of Education would advise as to what they ought to do. If there should be at the end of the discussion any pronouncement as to the feeling of the meeting on the subject, he would like to express his personal opinion that the time devoted to studying processes of building in a builder's yard would come better after the term of training and pupilage than before. In the practice of engineering the opposite order occurs, for students go first to the workshops and then afterwards to the drawing-office. But an architectural student wants to see what the processes of design are, and the only way of doing that is to be in an excellent school, like that of the A.A., and then to enter an office. He might with advantage act for a time as clerk of works or be under one on a job.

Mr. ALLAN POTTER contended that academic study was wanted more than anything else; but to be any good it must be practical. One great difficulty at the present time was to get a unanimous opinion about what is good and what is beautiful. It had been argued that what appealed to the greater number was probably more beautiful than what appeals to one. But we know in practice that such is not the case. Next it was said that the most perfect beauty is what is appreciated by the most perfect man—i.e., the one who is organised and developed to the highest pitch of harmonious working. For contemporary needs, however, it may be accepted that if a building appeals to the best minds at the present day and equally satisfies them, it is probably a more beautiful building than one which would appeal to either of the other two classes. We have no works of the most perfect man, though we have a basis of study in Nature. In Nature forms are continually changed in accordance with different circumstances and different requirements. Whatever form Nature takes, however, beauty crowns all. There are forms shaped definitely to achieve certain functions. In the architectural world they were all tired of fashion and revivals. The great danger of the present feeling of interest in Greek work and in the grand manner is the possibility of it merely becoming a revival of a revival. The nineteenth century was a century of research and the finding-out of facts. We have now a tremendous storage of facts, and we want to turn them to use. The Gothic arch was to the Greek lintel what our steel construction is to the Gothic arch. We should to-day try to design an architecture suited to our present circumstances, just as mediæval architecture was to its circumstances and Greek to theirs. All design must be based on knowledge of materials and construction and circumstances; but any training that provides only that knowledge is as incomplete as the training of a man would be if he occupied his time solely in physical culture.

Mr. ARTHUR KEEN in closing the lengthy discussion said he would not take a vote on the motion. The only criticism he would make was whether there had not been too great a tendency to discuss the matter of training without sufficient regard to what an architect at the present day really had to do. It is now practically impossible for him to carry on his work except by designs on paper. There were also his multitudinous other duties in connection with a building to consider.

A vote of thanks having been passed, Mr. Fyfe briefly replied to some of the points.

The next meeting of the Architectural Association will be on February 6 when Professor W. R. Lethaby will read a paper entitled "Greek Buildings."

ITALIAN ART IN THE NINETEENTH CENTURY.

THERE is now on view in the Furniture Galleries of the Royal School of Art Needlework, Exhibition Road, a really remarkable clock, which for beauty of design and delicate workmanship might well rank with any of the famous masterpieces of olden times, when artists and craftsmen combined to produce wonderful clocks since treasured in museums and the galleries of private collectors.

This most interesting illustration of Italian art is modelled in solid ivory—carefully selected and most richly carved—standing 57 inches high. There is a dignity in the architectural lines commanding attention, and the solid ivory



plinth or base gives a sense of security and enhances the beauty of the delicate carving.

The pendulum, itself a piece of exquisite mosaic, is enclosed and guarded by golden gates jewelled with tiny pearls, and the pillars supporting the clock are formed of lapis-lazuli, and enamelled. The dial is also enamelled and surrounded with garnets.

Perhaps the most beautiful part of the work is a carved ivory plaque in front of the base, representing "Harvest," while the principal carving surrounding the dial is an exquisitely detailed piece of work representing nymphs, cupids, and various allegorical figures.

The purity of the ivory is heightened by a judicious introduction of emeralds, rubies, and amethysts, and the cornices are beautified with perfectly modelled ivory figures typical of the four seasons. A carved figure of "Time" surmounts the entire structure, itself silent, but as the clock in dulcet tones strikes the hour, this ivory emblem seems eloquent with the unspoken motto "*Ars longa vita brevis.*" Altogether, quite worthy a visit of inspection is this beautiful example of Italian workmanship, and the Royal School of Art Needlework, always rich in treasures of embroidery and lace and antique furniture, may be congratulated on its enterprise in having secured a work of art such as is seldom seen in this country.

THE ILLUMINATING ENGINEERING SOCIETY.

THE LIGHTING OF LIBRARIES.

(Continued from last week.)

FOR practical purposes the most important light for the reader is and must be, the local reading-lamp. No general lighting will meet the case, for it would involve a wasteful and intolerable blaze in order to obtain sufficient light to read by.

It is of great importance to provide a *separate light for each reader*. Every librarian will at once cry out about the luxury of it and the cost. As to the luxury let it be remembered that the necessities of to-day were always the luxuries of yesterday, and the separate light will be the necessity of to-morrow. As to the cost it can be shown that it is more economical. The principle has already been adopted in the libraries of several clubs, in which a shade is used something akin to those made for theatre orchestras, although a dense green ordinary cone shade, with the lamp well recessed, would be equally satisfactory, and the position of both lamp and reader be pleasantly seen. There are other simple forms of shades to meet special needs, but in all cases the depth of the shades must be adjusted to cover the eye in sitting or standing. At the British Museum there is one reading-lamp between two readers—this means that for one reader the lamp is on the wrong side, while it often produces an unpleasant jostling of heads and elbows, and a feeling in the heart of each that the other is trespassing.

Librarians have pointed out that when readers are within control of the lamps they frequently and selfishly endeavour to monopolise more than their share of the light to the discomfort of others; whereas the real interpretation should be that the reader absolutely needs more light. Nothing produces aching eyes more readily than an insufficiency of light.

The tendency of the librarian is to treat every reader alike. Well, that sounds fair enough, but in reality it is very unfair, and is thrusting unnecessary hardship upon all classes of readers. Men's eyes differ: some experience trouble for want of light, others from the glare of excess; sometimes a reader gets bright white paper and large type, and he needs a quiet light; later he may have dark paper, small type, or an indistinct drawing, and will need a strong light, while some paper needs a careful adjustment of the incidence of light—all of which means that no two readers need the same light, and leads to the next essential point—viz. that *every reading-lamp should be adjustable and under the control of the reader*. When at home do we not find it essential to be able to adjust the light to our work—the need must be the same in a library. There are a number of suitable devices for movable lamps already on the market, and a little ingenuity might add to their suitability. Broadly they are of two kinds, those which move up and down only and those which move in several directions—either may be standards, brackets, or pendants. The lamp should reach down to about 1 foot from the desk and rise to about 2 feet 6 inches.

With regard to the necessary intensity: a clerk writing on white paper may do very well with 1 foot-candle, as the eye-strain in writing is not nearly so great as for reading, where at least 3 foot-candles would be required to meet the same effort. The amount of illumination on a table or desk should, at a distance of 2 feet 6 inches be about 2 foot-candles, which, when lowered, would be increasable at the reader's will to about 12 foot-candles.

He went on to suggest a considerable saving in current expenditure without depriving the reader of the "luxuries" advocated, and that is the third point—viz. that *readers should be left to switch on and off their own lights*. Some librarians say that the public could not be trusted to deal with movable lamps and switching arrangements. It is a slowly dying prejudice. Public enterprise has over and over again shown that it pays to put confidence in the people, more particularly when they are intelligent readers. He had been in the South Kensington Library when every light had been going with scarcely a reader; in the Patent Office when nearly all the tables were empty; in the reference library and newsroom of the Guildhall with but five readers, and in each case all the lights were fully going as though they were being used. Is this economy, and what has the taxpayer to say about it? If, on the other hand, his proposal were adopted the reader would walk into a quietly lit room, select his table, and switch on the light which would be concentrated on his

book. When he leaves his desk it should be and would become a matter of ordinary good behaviour for him to switch off his light; but should any one fail to do so the assistants are always on the spot and could easily remedy the omission.

There would be, of course, a little extra first cost—100% should cover it in any library—and if that is objected to let that extra cost be saved out of the architectural ornament, for much as we may approve of a worthy building for a worthy purpose the book and facilities for reading it are the *sine quâ non* of a library.

All this implies that each reader should have an apportioned space or desk. It is done so at the British Museum with a width of 4 feet 3 inches, but 3 feet 6 inches should be ample for simple reading.

Much that has already been said will apply with equal force to the newsroom.

In the majority of libraries, although there is often a brave show of lights, the stands are badly and unequally lit. The rule appears to be to distribute plain pendants throughout the room, regardless of the positions of the stands or desks, and consequently the amount of light in foot-candles reaching the newspaper is often ridiculously small. At the Guildhall and at other libraries the reader is able to admire the form of his own shadow in front of him, and has to read through the gloom of it. At Wandsworth, Kensington, and many other places a lamp is suspended directly over the stand—the very worst position, for by reason of the extremely oblique direction of the rays the illumination is very small and reading is rendered still more difficult in consequence of the puckering of the paper. Fig. 2 illustrates this. A

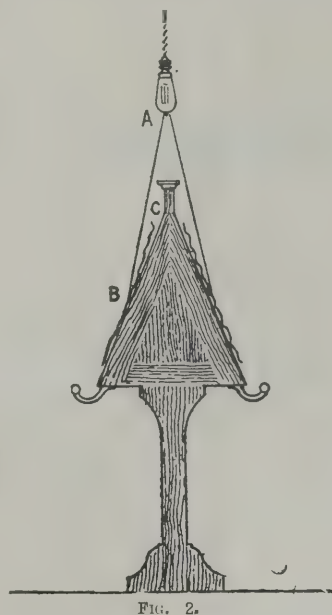


FIG. 2.

is a 30 c.-p. lamp, the downward radiation of which is, however, only 18 c.-p. The lamp is 3 feet from the centre of the desk at B, and the angle of incidence A B C is 10° ; therefore the illumination of the slope is $\frac{18 \sin a}{3^2} = 0.34$

foot-candles. What a miserable result from a 30 c.-p. lamp, and what a waste of light!

The best arrangement he had seen is at Cripplegate. The newspaper-stands are 8 feet long, for two newspapers a side, and 2 feet from the end of each—that is, in the centre of each newspaper—is a bracket lamp at about the level of the top of the stand, and projecting 15 inches. A light of about $3\frac{1}{2}$ foot-candles is thereby obtained from only an 8 c.-p. lamp. Here you have a splendid light for a small expenditure of current, and independent of the crumpled paper. On the other hand, the lamps are painfully visible whichever way you turn; a simple improvement would have been to have had deeper shades and to have them directed towards the newspapers, as in fig 3.

Referring to the subject of paper-gloss, Mr. Darch said that we all know the unpleasant effect of the reflection of a bright sky from the surface of water or from wet streets, and are generally in haste to remove ourselves from it. Precisely the same thing happens, but in a lesser degree, with paper. There is no paper that has not more or less of a distinct gloss when viewed in the angle of reflection from any bright light—and it usually happens that the ink is also glossy—consequently, not only is a greater effort required to distinguish details, but the excess of light and heat

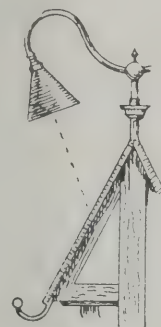


FIG. 3.

which may be unnoticed at first becomes eminently irritating and injurious in the course of a protracted sitting. This can easily be avoided, and it certainly should enter into the calculations of the illuminating engineer.

Let us take a news stand, fig 4. If the lamp were at B the incident light at A would reflect into the reader's eyes; in like manner, if the lamp happened to be placed higher or lower, then the glare would be seen at correspondingly higher

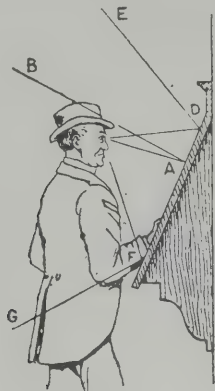


FIG. 4.

or lower points on the stand. It follows, therefore, that to avoid glare from any part of a newspaper the lamp must be placed somewhere on the line D E.

(To be continued.)



[The Editor will not be responsible for the opinions expressed by Correspondents.]

The Royal Mausoleum, Frogmore.

SIR,—May I ask you to be so good as to contradict a report extensively circulated in the daily press in connection with the recent memorial service at the Royal Mausoleum, Frogmore, and regarding the lately completed decoration of that building? Apart from certain inaccuracies in the description of the work, the reports in most cases contain the misleading statement that the work was only executed and not designed by myself. This is totally incorrect. I myself designed, as well as painted, the groups of angels which form the subject of the decoration of the interior of the dome; and all the stained glass, with which the windows of the Mausoleum are now entirely filled, is likewise of my own design.

I must apologise for troubling you in the matter, but my professional reputation as a decorative artist would be seriously prejudiced if the impression were allowed to go abroad that my personal responsibility for the numerous commissions, at Windsor and elsewhere, entrusted to me by their late Majesties Queen Victoria and King Edward was limited to only the merely mechanical portion of the work.—I am, Sir, yours faithfully,

ION PACE.

Milneholm, Hounslow, Middlesex: January 27, 1911.

Petrol Air-Gas.

SIR,—Professor C. A. M. Smith, M.Sc., in his concluding paper on the above subject has recommended the appointment of a committee of the Royal Society of Arts to investigate and report upon the merits of any and all apparatus entered for competition, and the writer welcomes the suggestion, and would support it in every possible way, as certain claims have been made for particular systems of air-gas, and the sooner these are thrashed out and it is determined whether or no these claims can be upheld the better.

To make the report of any practical value, the actual cost of the gas, taking the price of the petrol (obtaining when the tests were made) used by the various plants, would have to be given, and the tests should include, not only the capability of producing an uniform gas under varying loads, but the efficiency of the gas for lighting and more especially for industrial heating.

It would make the investigation of much greater value if comparative tests with coal gas could be conducted at the same time, as it is most misleading to make comparison of heating efficiency from calorific values, as the calorific value of coal gas always quoted is that obtaining at the gas works, and not as

delivered to the consumer, and a self-consuming air-gas mixture lends itself to a much more perfect application than is possible with coal gas, and every practical engineer knows how very important is the application of the gas for the purpose of economy and efficiency.—Yours faithfully,

THOS. H. GLASSCOE.

January 28, 1911.

Old and New Work.

SIR,—Mr. Fyfe's thoughtful paper at the A.A. leads me to remark that, though I would not say that the old work was never wrong, I do say (speaking for myself) that it is rarely as wrong as is much of the work of our own day, and why? mainly because the faith and the humility of the old men are now generally absent. Whether artist or craftsman, though their work remains with us, their names but rarely do.

In a sentence, I for one believe in our doing our very best for the small things, leaving the great ones to greater minds. The small things abroad seem, more or less, left out in the cold, but we need hardly strive to imitate that. Anything worth doing at all is worth doing well, let who will sit in judgment on the result. All may and should work in accordance with opportunity, and in the spirit of our several measures and limitations. These we can rarely ourselves control. The tuition, whether of the "Atelier," or the "Yard," each good in its own way, is no barrier against self-conceit which, by substituting self-respect for it, may end in much good result for us all, old or young. There would be little demand for bad and cheap building if we all paid that attention to the small matter that, somehow or other, is supposed to be beneath our notice. As Ruskin said "Phidias can niche himself in the corner of a pediment."—Yours truly,

E. SWINFEN HARRIS, F.R.I.B.A.

York Minster.

SIR,—There is something charmingly gracious in the velvety darkness of a summer night, and its sweet freshness roused me, as after a long and wearying journey I made my way out of the station. When I got well outside the very stillness and quiet seemed not to betoken so much the sense of loneliness so usually associated, but rather one of magnificent solitude.

My path homewards led me in the direction of the Minster.

At this hour the mind refreshed by the cool night air seemed more fit to receive and revolve impressions. A description I once came across of this, one of the loveliest of our English cathedrals, viz., "A Kyrie Eleison in Stone," by its very brevity conveyed more than a mighty volume.

When I reached the N.W. front I was compelled to stand and gaze. Even at this moment the gentle breeze that whispered round the sacred pile became fraught with messages of sanctity. How the air was redolent with visions of the mighty past; of warriors who had pledged their vows, of prelates famous, and all the mighty pomp of mediæval Christendom. For there, sequestered deep in niches, one could unconsciously trace figures illustrating the piety of the souls that helped to enrich.

"And such too is the grandeur of the dooms

We have imagined for the mighty dead."

Gradually one's gaze wandered slowly to where the silvery grey of the outlined pinnacles seemed to climb into the dark pall of the night. 'Twas not the details that pleased in this light, but rather the intense magnitude of the building.

The sense of solitude and quiet was supremely entrancing, not bewildering by its sense of loneliness, but rather as an impressive glimpse of the potent rule of time. But even now the silent workings of the dawn were busiest, and ere the last glorious sparkle of a golden star had begun to fade before the soft approach of a summer morn, a bird in the far distance twittered cheerily, and with a sigh for such a moment of exaltation, I turned to wend my way homewards.

WILFRID J. MILBURN, Sculptor.

Bootham Bar, York.

MR. A. CARNEGIE has intimated that he will give 2,000l. towards the establishment of a free library at Huthwaite on condition that the town provide a site, and agree to a rate of one penny in the pound.

THE Rochdale Art Gallery Committee recommend the Town Council to extend the present building to accommodate the thirty pictures presented by Mr. R. Taylor Heape as a Coronation gift. Already the gallery is overcrowded. The cost of the extension is expected to be about 5,000l.



LEVERINGTON, CAMBS.

View of Porch

from

South East

August 1910.

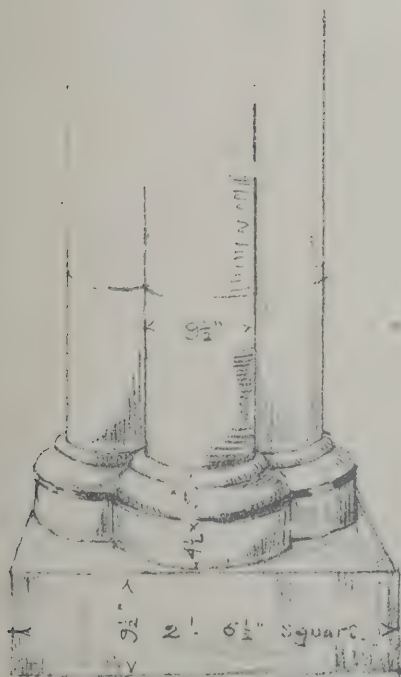
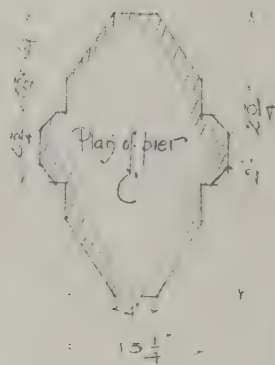
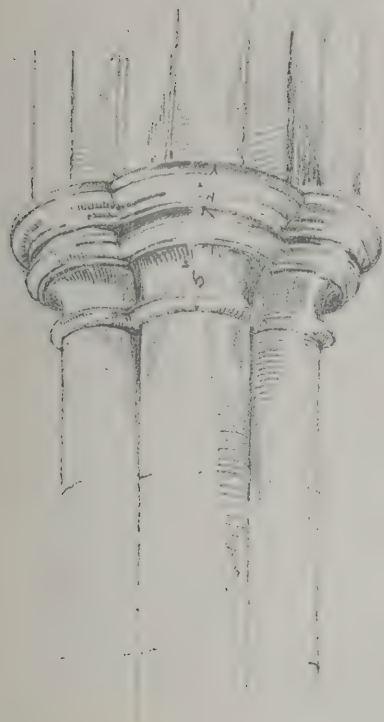
INK PHOTO SPRAGUE & CO. LTD. 4 & 5 EAST HARDING STREET FETTER LANE E.C.

TRAVELLING STUDENTSHIP DRAWING BY MR. CHARLES HENRY WALSH.

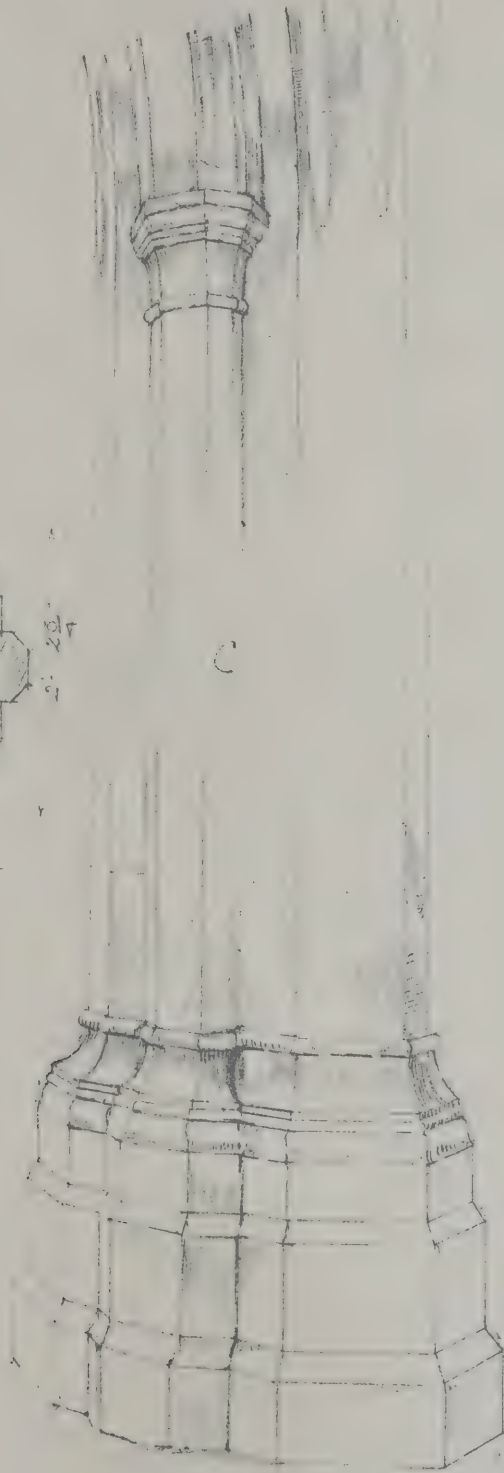
"THE ARCHITECT" STUDENTS' SKETCHING & MEASURING CLUB.

ST. PETERS CHURCH:
WISBECH. CAMBS.

Aug 1910
C.H.W.



Pier in Chapel.

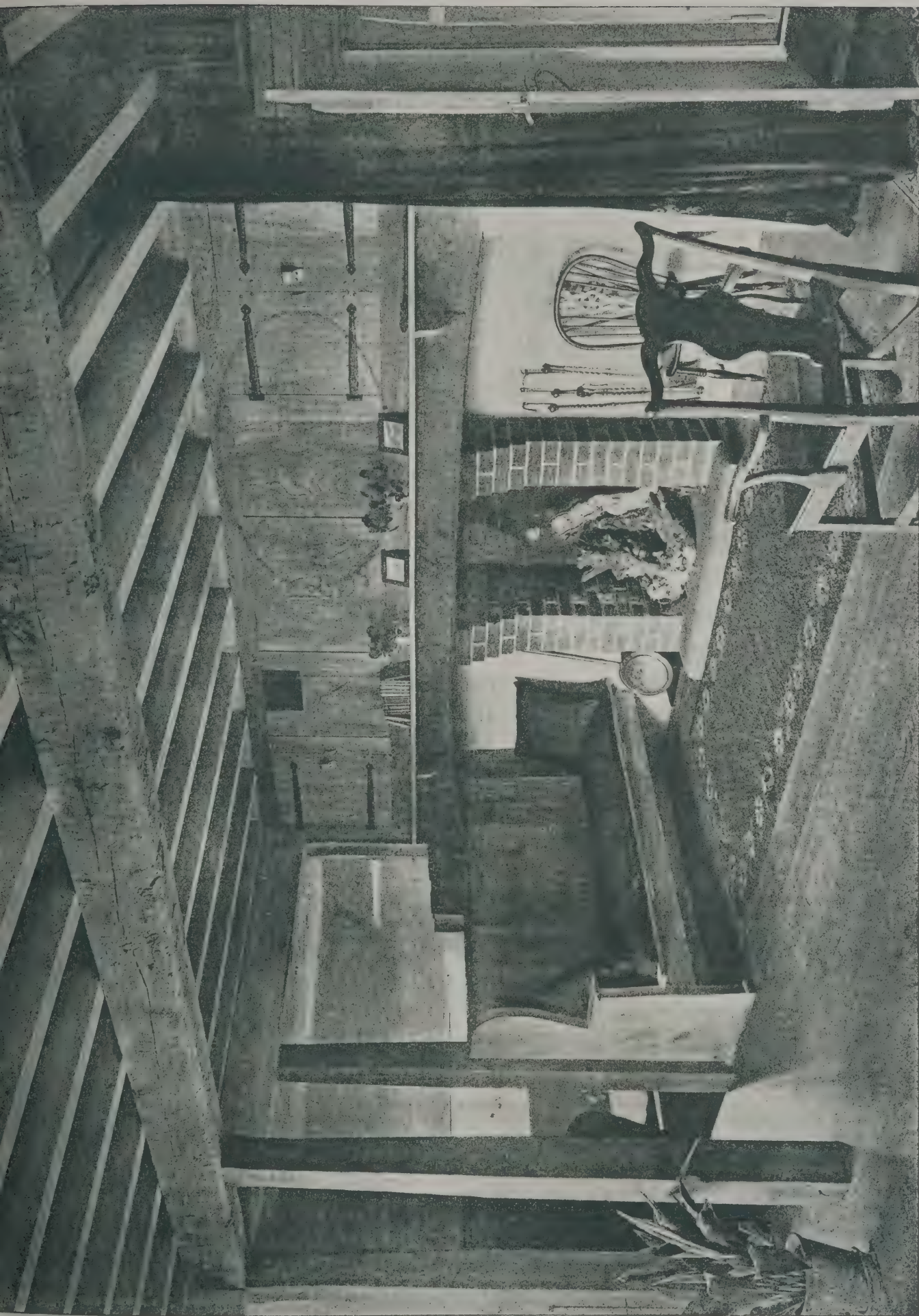


Pier: Centre Nave Arcade.



THE STUDY, STRATFORD ROAD, BIRMINGHAM.

PHOTO BY THOS. LEWIS, STRATFORD ROAD, BIRMINGHAM.



1744 WICKHAM EGGHOLE & CO. LTD. 4 & 5 EASTWARD STREET PETER LANE E.C.

PHOTO BY THOS. LEWIS, STRATFORD ROAD, BIRMINGHAM

INTERIOR, WOODBERRY HILL.

Mr. BAILLIE SCOTT, Architect.



SO



THE HALL.

PHOTOS BY CHAS. R. H. PICKARD.

PYTCHLEY HOUSE.

Messrs. THOS^A



VIEW.



PRINCIPAL ENTRANCE AND HALL WINDOW.

INK PHOTO SEPACUE & CO. 1, 3 & 5, EAST HARDING STREET FITTER LANE E.C.

The Architect.

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FORTHCOMING EVENTS.

Saturday, February 11.

Royal Institution : Mr. T. G. Jackson, R.A., on "Architecture—The Byzantine and Romanesque Period."
Architectural Association : Second Spring Visit—to the Money Order Office, Holloway N.

Monday, February 13.

Royal Institute of British Architects : Papers by Mr. Paul Waterhouse and Mr. E. A. Rickards on "The Artistic Development of London."
Victoria and Albert Museum : Mr. Banister Fletcher on "Westminster Abbey" (University of London lectures).

Tuesday, February 14.

Royal Academy : The Dean of Gloucester on "The Merovingian Abbey of St. Martin of Tours (A.D. 472-A.D. 999)."
Nottingham Architectural Society : Exhibition of Designs of Ecclesiastical Work and criticism by Mr. W. R. Gleave.
British Museum : Mr. Banister Fletcher on "Roman Tombs, Aqueducts and Bridges" (University of London lectures).

Wednesday, February 15.

Edinburgh Architectural Association : Paper by Mr. Lawrence Weaver.
Carpenters' Company : A Demonstration in Modelling by Mr. Alfred E. Drury, A.R.A.

Thursday, February 16.

Illuminating Engineering Society : Discussion on School Lighting, to be opened by Dr. James Kerr and Dr. N. Bishop Harman.
Carpenters' Company : Mr. W. E. Riley on "The Transition of London's Plan and the Disappearance of its Land Marks and after."

STUDY AND STUDENTS.

IN his presidential address to students at the Royal Institute, Mr. STOKES touched lightly upon some of the most important and at the same time most difficult problems connected with the studentship days of a young architect.

Emphasising the importance of proportion as an element of architectural design, the President ran a tilt against the "rule-ridden type of learning," by which we understand he intended to refer to the canonical systems of proportion to which so much importance was attached in the middle period of the Renaissance. Here we are face to face with one of the earliest difficulties that confront the student in his study of design in architecture. It is impressed upon him by his teachers that good proportion is all important, or, at least, of primary importance in architecture. How is he to ensure in his designs any sense of proportion at all, and how is he to distinguish between good proportion and bad? Or to know whether proportion admits of a distinction between good and bad, or merely of existence and negation?

There can be no doubt that in all good architecture there is proportion of an exact and definite nature, and that the investigations of PENROSE on the existence of systems of proportion in the masterpieces of Greek architecture have revealed actual facts and not imaginary figments.

This is not to say that ICTINUS and his contemporaries adopted arithmetical rules for the proportioning of the major and minor parts of their designs, still less that they employed definite systems of ratios. Neither need we suppose that TURNER painted his pictures with a conscious recognition of those rules and principles of composition that RUSKIN has told us are to be found exemplified in the work of the master. But we have the artist's own authority for the saying that he mixed his colours with brains. How much was due to conscious and how much to sub-conscious intelligence we cannot attempt to determine.

As excellent works of architecture can be demonstrated to possess proportions expressible in definite ratios, it is scarcely surprising that PALLADIO, VIGNOLA, and the rest should endeavour to formulate rules by which satisfactory proportions should be an accompaniment of the buildings they designed, and by restricting themselves to certain approved combinations of modules and minutes should believe themselves able to produce a pleasing effect on the eyes of their contemporaries and critics.

Nor is it only in the Greek or Renaissance periods that we find buildings that have been or may have been designed with the help of recognised systems of numerical ratios in order to incorporate what we call proportion. We

know that in mediæval times designs for buildings were proportioned by the use of systems of triangulation, so that we may conclude as a general proposition that in every epoch of excellent architecture in the past, artificial and mechanical aids to the proportioning of buildings were sometimes actually used, and even more often consonant with the designs executed.

How is our present-day student and practitioner of architecture to attain that element of proportion so vitally important? Is he to regulate his conceptions by modules and minutes, or by the aid of the Egyptian triangle? Of necessity our modern buildings are very rarely of the simplicity in form that characterised a Greek temple, a mediæval cathedral, or an Italian palazzo, and any attempt to design, say, a modern municipal building on a restricted and irregular site by a rigid adherence to accepted canons of ratios, would involve such an overwhelming amount of drudgery as would inevitably damp all enthusiasm and quench all imagination in the designer, and hence for our purposes and requirements "such rules are," as Mr. STOKES said, "apt to give us commonplace and lifeless results."

But if the student is to dispense with rules and canons, he must find some substitute that will enable him to produce designs in architecture that will possess right proportions. This substitute should be such a training as will ensure his eyes and judgment doing their work properly. For this purpose it is essential that the early study of a student should be restricted to such ancient buildings as are acknowledged examples of good proportion. The selection of these should be the care of his teachers and masters, for as his own judgment is not yet formed, he must be content to rely upon that of others already rightly trained.

Herein lies the value of the atelier method of instruction for the young architectural student and of a preliminary grounding in the study of Greek architecture and the Orders. This should precede any work in the office of a practising architect where the exigencies of business may lead, as they often do, to the production of buildings destitute of a fine sense of proportion. The greatest restraint should be exercised by a student in the selection for himself of buildings to be studied by sketching and measuring, and in this respect the warning given to travelling students by Mr. STOKES was of high importance. The judgment or sense of fine proportion on which an architectural student must rely in his future career, is an extremely sensitive plant, the fair growth of which may be readily twisted or distorted.

For example, the Renaissance work of Germany and of our own Elizabethan and Stuart periods should be shunned

like poison, whilst Greek or French work may almost always be regarded as safe from the acutely developed intuitive rightness of judgment or taste that is their usual characteristic. Examples of Italian Renaissance architecture should be selected with caution, and in the case of young students under competent advice. By thus training himself in the feeling for right proportions, the student will educate his eye and judgment to a sub-conscious exercise which will enable him, in his future work, to dispense with rules.

Another subject on which the President touched is one of some sadness—the failure of brilliant students and prize-winners to carry out in their subsequent career the promise of their early successes. The causes of this are probably numerous and divergent. On the one hand there is the detrimental effect of precocity on mental development, an effect that is not confined to architecture but is common to many other spheres of trained intelligence. The Royal Institute of British Architects is not alone in the possession of a list of prize-winners who have not, in their later life, maintained the position gained amongst their contemporaries. The Royal Academy Schools of Painting and Sculpture and the Universities can show an equal, if not greater, percentage of mediocrities and even of nonentities in their rolls of brilliant students.

The profession of architecture is particularly encumbered with influences tending to deaden the artistic powers of its members. The necessity for earning a living often requires a devotion to dilapidations and drains that is hardly compatible with a fine sense of proportion or fecundity of imagination, whilst the ordinary business transactions inevitable to the realisation in bricks and mortar of the prize-winner's early designs when he commences practice for himself may readily have a paralysing effect upon his development as an artist. Hence, he should continue to study in order to maintain in their fullest capacity his judgment and his imagination. Above all, he should never allow himself to be tempted with the idea that because he has already achieved some success, he can rest on his laurels and be content with the ability he has acquired. Stagnation is death to the artist. Progress is indispensable not only to his development, but to the maintenance of his powers.

THE ARCHITECT'S STUDENTS' SKETCHING AND MEASURING CLUB.

WE are pleased to welcome this month several new workers in the Club, and we trust that they will continue to contribute with regularity, and so gain knowledge and experience even although on their first essay they are not fortunate enough to obtain a prize.

Mr. KENNETH W. LUCK sends a drawing of the font at St. Andrew's Church, Gorleston-on-Sea, which has been so seriously defaced by the notorious DOWSING as to be scarcely worth measuring. Mr. LUCK has made the mistake of giving us a perspective sketch instead of the measured drawings asked for in the conditions. He must remember in future that by measured drawings are meant plans, elevations and sections, with detail drawn geometrically to scale. The defaced and mutilated condition of the example he has selected has tempted this gentleman to a post-Impressionist manner of drawing which is not desirable in the representation of architecture.

Mr. W. E. CHADWICK has also made the mistake of sending a perspective drawing which is not correctly to be described as measured because a few dimensions are figured. His subject is a tub font with carved oak cover from the church of St. Mary Steps, Exeter, worthy of a more careful study and better drawing. Mr. CHADWICK should avoid blacking in solid part of the plane surfaces he represents in a sketch or drawing, which only creates a false effect. Mr. CHADWICK has also sent perspective sketches of the Bishop's Throne and Sedilia at Exeter Cathedral, subjects that are rather beyond his powers at present, with their wealth of intricate tracery and carving.

He should try simpler things to begin with, and make thorough and painstaking studies to a large scale before tackling intricate and difficult subjects to a small one.

Mr. T. OWEN THIRTLE has measured and drawn the font and cover at the church of St. Michael at Plea, Norwich, of which the font is an example of a type common in East Anglia in the fifteenth century and the cover is an interesting piece of seventeenth century work. Mr. THIRTLE has done his work well, but more details are wanted to make it complete.

Mr. CHARLES S. CARTER has made a study of the magnificent cover and good font at Ufford Church, Suffolk, one of the finest examples remaining of the Perpendicular period. Mr. CARTER has quite rightly drawn plans of the cover at different levels, but to fully understand the composition of such an intricate piece of work it is necessary that plans of all the stages should be drawn one over the other, so that the changes of form and relative dependency of the parts should be readily grasped. More details are desirable to complete the study.

Mr. E. H. GIBSON has selected his example from the church of St. John Baptist, Knaresborough, where a fine example of a seventeenth-century cover surmounts a rather poor fifteenth-century font.

"Le Quayt" sends a good drawing of a sixteenth-century cover on an Early English tub font in Bolton Percy Church, Yorkshire. The cover is more curious than beautiful, with its quasi-Perpendicular traceried panels modified by the Renaissance feeling.

"Sans Peur" also contributes a sixteenth-century cover, which surmounts a font of later date. These are from the church of St. John, Newcastle-on-Tyne. The cover shows the lingering of the Gothic tradition in its form, though the details are influenced by the new spirit of the time. The author sends a perspective sketch as well as good measured drawings, but although we are pleased to see it, we have not allowed this fact to influence our decision as to the prize.

We have decided to divide the prize this month equally between Mr. E. H. GIBSON and "Sans Peur," nearest to whom in merit come Mr. CHARLES S. CARTER and "Le Quayt."

NOTES AND COMMENTS.

WE are desired to express to our readers the regret of the Publisher for any inconvenience they may have suffered by the appearance of part of our last week's issue some few hours later than usual. The delay was occasioned by injury to some of Messrs. Spottiswoode & Co.'s machines.

As our readers are no doubt aware our printers are in the thick of the dispute between masters and men in the printing trade and we trust that forgiveness will be extended for any shortcomings in *The Architect* during the strike. We recognise that the men have a perfect right to demand shorter hours or more pay and to strike, but on the other hand the masters have an equal right to refuse the conditions demanded. Then comes the fight wherein lock-outs, strikes and peaceful picketting are legitimate weapons, and we hope to see a fair and square contest notwithstanding that we realise that the customers of Messrs. Spottiswoode, ourselves and others, are likely to be inconvenienced although we are not directly engaged in the unfortunate dispute.

THE Town Hall Committee of Newcastle Corporation have under consideration a report by the City Property Surveyor, Mr. F. H. Holford, upon the proposed re-arrangement of the Hall. The report embraces three schemes. The first does not bring within its compass the Concert Room, and the estimated cost is 21,653*l.*; the second includes the absorption of the Concert Room for municipal purposes, and the estimated cost is 27,129*l.*; whilst the third plan of alteration provides that about a third of the Corn Exchange be absorbed for offices, &c., and is estimated to cost 15,581*l.*

DEVON AND EXETER ARCHITECTURAL SOCIETY.

THE Annual Meeting of the Members of the Devon and Exeter Architectural Society (embracing the counties of Devon and Cornwall) was held at the Central Hotel, Lookyer Street, Plymouth, on the 28th ult., the President, Mr. William H. May, M.S.A. (of Plymouth), being in the Chair, and among those present were Messrs. J. Crocker, John M. Pinn, J. Jerman, J. A. Lucas, C. Cole (Vice-President), Harbottle Reed, E. F. Hooper, B. H. Palmer (Exeter), A. S. Parker, C. King, R. H. Arthur, H. L. Thornely, E. W. Lister, H. Watts, R. A. Mill, Lister, junr., B. P. Shires, E. Coath Adams, J. S. B. Ward (Plymouth), C. Cheverton, E. M. Leest, J.P., A. J. Adams, C. H. Phillips, A. G. Smith, C. H. L. Varcoe (Devonport), Sampson Hill (Redruth), and Allan J. Pinn (Hon. Secretary).

The Hon. Secretary presented the Annual Report.

The balance sheet presented by the Hon. Treasurer (Mr. S. Dobell) was of a satisfactory character and with the Report, was unanimously adopted.

The retiring President, Mr. W. H. May, then delivered the following address :

Gentlemen,—In the few remarks that I shall make I wish first of all to touch on sundry items referred to in the report.

Concerning the library, do members fully realise the value of this asset? Comparatively few books are taken out and I need not say that we have some excellent works that should be studied by students, and the Council is always anxious to obtain reference works of interest to the members if they will state what they require.

The younger members—and we have several—do not show the enterprise they should in availing themselves of the privileges that the Society offers: no drawings have been sent in this year for the book prize. I sincerely hope that during the coming year a greater desire to study will be manifested and that there will be keen competition for the prize, which is well worth winning.

It cannot be long now before our turn will come to have a seat on the Council of the Royal Institute. When it does I trust our representative will be firm and outspoken, as I feel sure the difficulties that beset us down in the West are not always realised sufficiently by that august body. Our members being so scattered throughout the two counties of Devon and Cornwall, the difficulties of successfully organising a meeting at our headquarters that can be largely attended are almost insuperable. The desirability of occasionally holding meetings in other towns apart from Exeter is, I think, a question that should be carefully considered by the Council, as I have noticed that under our present arrangement only Exeter members as a rule are able to attend these gatherings. It is to be hoped that interest in our society will be maintained and strengthened throughout the coming year, and that members will not be reticent in coming forward and expressing their views on all matters relating to our profession. Papers are always welcomed and discussions encouraged.

The past year has fortunately never been surpassed by coincidences so detrimental to the revival of architectural and building matters. Two general elections and the death of King Edward VII. are in themselves sufficiently serious, but coupled with the stagnation that existed in the building trade at the beginning of last year it is impossible to expect a better state of affairs to that which exists.

Whether the storm is over and a calm is setting in it is difficult to say at present. There are welcome rumours that the general trade of the country is improving; but, as it is a recognised fact that the building trade is the last to feel the beneficial influence of such a movement, it is more than probable that the day is still far distant when we in the West will realise the looked-for improvement.

Among the builders who tender for us there appears to be an almost unhealthy keenness in the competition for the comparatively small amount of work about, often causing them to overlook the conditions of contract and rely on variations, omissions, and extras to make the job pay, which, one need hardly say, are usually futile. The struggle for existence among some of them must be very severe, and many good men have been brought very low.

Good work, which is the cheapest in the long run, cannot be assured when the builder finds he has priced his quantities in a manner that will not pay him, and we cannot therefore be too careful in advising clients on the acceptance of tenders.

The dearth of architectural schemes during the past year is unsurpassed; but it is to be hoped that, with the Coronation of King George V., a stimulus for improvements and developments will be aroused and that my successor in the Chair will have the opportunity of retrospectively enlarging at our next Annual Meeting on a materially improved state of affairs.

As regards registration, what has been done? Little or nothing. The Royal Institute is on the active tout for the new Licentiate class which is to increase its numerical strength—to say nothing of its funds—and enable it to obtain a Registration Bill. Let us wait and see.

From my own point of view I cannot believe that any English Government will sanction so one-sided a measure. The Bill must be universal, and why the Institute should ignore other established societies is only known to itself.

Certain remarks have been made recently in the professional papers to the effect that the Royal Institute has approached the Society of Architects concerning the proposed Bill. If such is the case—and at present there is no official confirmatory statement—it is a movement that will materially strengthen the cause, and I am of opinion that united we shall stand and hold our own, but divided we are bound to fall.

I have already reported on the Town Planning Conference, the greatest movement for the year and one that should be of unrivalled benefit to the nation. The thanks of all are due to the Royal Institute for its success.

I must not pass from this topic without referring to certain monstrosities that have been illustrated in some of the West of England papers of late concerning suggestions for town improvements. We all appreciate and realise the good the Press can do in such a cause, but to give publicity to such lamentable productions of ignorance and inability is, to put it mildly, a mistaken kindness. It is earnestly to be hoped that in the future competent advice will be taken before giving prominence to such so-called architectural schemes.

The great question of copyright in architecture has occupied a prominent position during the past year, and one of the most antagonistic views to be overcome is that of Mr. Justice Scrutton, who, on appending his signature to the report of Lord Gorell's Committee, made a reservation to the effect that he could not concur in the inclusion of architecture among the protected acts owing to the difficulties he foresaw in the trial of what are new and original features and the remedies for infringement.

A great difficulty in this much-vexed question is the apparent impossibility of making legal authorities understand what an architect is and what are his claims to legal recognition and protection. Registration will, of course, be of the greatest assistance on this point.

The Royal Institute Committee has given most careful attention to the Copyright Bill, and it is to be reasonably surmised that at some future date, when either in this Parliament or some other the Bill is again heard, the action of the Royal Institute will not be disregarded.

During the past year, when in Belgium, I visited one of its great centres of the manufacture of cement, and, my interest being so aroused at seeing such large quantities being prepared for the English market, I made with assistance the following general observations, which I hope may be of interest to the members. We are all aware that this material is often used in England and, unfortunately, substituted for English material under the misnomer of Portland cement. Much of it that has been sold in England is composed of a mixture of natural cement and ground stone or sand, with a small percentage of artificial cement to assist its passing certain tests. The Belgian natural cement is just the rock, as quarried, burnt in a kiln, the same as ordinary lime, and then ground.

The following is an analysis of good English Portland side by side with that of Belgium as imported into this country; but whereas the analysis of the English cement is one which may be taken as constant to, say, one make of cement, with the Belgium cement, owing to the varying nature of the material, it is difficult to find any two analyses alike.

	Belgian.	English.
	Per cent.	Per cent.
Insoluble matter	6.02	1.44
Silica	21.50	22.10
Iron	1.99	2.70
Alumina	4.75	7.98
Lime	56.93	61.00
Magnesia	1.36	.98
Sulphuric acid	1.21	1.65
Volatile matter	4.40	1.78
Alkalies and undetermined matter	1.84	.37

The average tensile strains obtained from a number of Belgian cement tests are as follows, viz. :—

After 7 days, 335 lbs. per square inch.	
„ 28 „ 475 „ „ „ „	
But a good brand of English cement will give :	
After 7 days 650 lbs. per square inch.	
„ 28 „ 750 „ „ „ „	
and when mixed with three parts sand :	
After 7 days 350 lbs. per square inch.	
„ 28 „ 450 „ „ „ „	

And this latter you will notice is practically equal to the tensile strain obtained with neat Belgian cement, so this reasonably shows that English is not only a much superior article, but, if properly handled, more economical.

The causes of the inferiority of Belgian cement are due to the uncertainty of the quality of the stone quarried and the method of burning. Some pieces of the rock quarried are identical in composition with Portland cement, while other pieces have only the composition of hydraulic lime; and owing to this variation in composition of the raw materials they are burned lightly, so that the underlined portions are not fused to a slag and the overlimed portions are altogether too lightly burned.

In conclusion, gentlemen, I thank you most heartily for the confidence you have placed in me in electing me your President for two years in succession, and I relinquish the reins of office hoping I have given satisfaction and with the knowledge that I have endeavoured to do my duty and maintain the dignity of the profession.

Mr. James Jerman proposed a vote of thanks to the retiring President for his excellent address and also for his valuable and untiring services in presiding over the Society during the past year, which was seconded by Mr. John M. Pinn, supported by Mr. B. P. Shires, and carried by acclamation.

The President, Mr. W. H. May, suitably replied.

The following Officers and Council were elected to fill the vacancies of those retiring:

Mr. James Jerman, F.R.I.B.A. (Exeter), President.

Mr. E. Coath Adams, M.S.A. (Plymouth), Vice-President.

Messrs. H. L. Thornely, F.R.I.B.A. (Plymouth); Sampson Hill (Redruth); H. Watts, A.R.I.B.A. (Plymouth); Mr. S. Dobell (Exeter), Hon. Treasurer; and Mr. Allan J. Pinn, A.R.I.B.A. (Exeter), Hon. Secretary.

The newly elected President, in taking the Chair, expressed his gratification at having been elected President of the Society, and assured the Members that nothing should be wanting on his part to further the best interests of the profession as well as of the Society.

A cordial vote of thanks was accorded to the Hon. Treasurer (Mr. S. Dobell) and to the Hon. Secretary (Mr. A. J. Pinn), the retiring President emphasising the devoted work of the latter for many years.

The meeting concluded with a luncheon (at which the majority of the members remained to support the new President,) followed by a short toast list.

UNIVERSITY OF LONDON LECTURES ON ARCHITECTURE.

THE Thermæ of the Romans derived their origin as well as their name from the Greeks.

These stupendous buildings formed the sole subject of Mr. Banister Fletcher's lecture on Roman Architecture at the British Museum on January 24.

The palaestra of the Greek athletes had baths, and swimming baths attached to them, as well as libraries, exedrae for lectures and practice grounds; the Romans borrowed the whole idea, developing it on an enormous scale, lavishing alike on structure and ornamentation all the skill and magnificence of their science and art.

The bath was the general meeting place for the Roman citizen, answering in some respects to the modern club. Here was a centre for the dissemination of news in a time when the daily paper did not exist. Athletic sports, races, &c., took place in the grounds, for which high stands were erected, and lectures were delivered from the various exedrae and halls; there were also libraries and reading rooms for those who wished to study. A very small fee, one quadrans, equal to about a farthing was made for admission by the Emperors who wished to ingratiate themselves with the people. This fee was paid to the balneatores who were in charge of the baths. The management was entrusted to the aediles, the magistrates of Rome, who also looked after all public buildings, games, markets, &c. A large staff of attendants and slaves served the baths: the janitor, or door-keeper; the capsarius, who looked after the bather's clothes; the unctor and reunctor, who anointed with oil; the barber, shampooer, and many others, together with the slaves for the furnaces, these in all numbered some hundreds.

In the time of the early Christians the baths were held in disrepute owing to the unbounded license allowed, and in the fifth century they fell into decay, the aqueducts which fed them having been destroyed by the Huns.

It was not until the beginning of the sixteenth century that the Baths of Titus were excavated, but the best preserved are those of Caracalla, which covered an area of 25½ acres, the whole of which was raised on massive substructures about 20 feet high; the north-eastern portion contained the central block or baths

proper. This block measured 750 feet by 380, about equal to Westminster Palace, including Westminster Hall.

A colonnade surrounded the whole of the north-east side of the platform, the ground level being probably occupied by shops, as small vaulted chambers, two storeys in height remain, the upper storey on the platform level in all likelihood being used as slipper baths. There was only one main entrance, on the north-eastern façade leading into the grounds. These were laid out for athletic sports, the south-western portion being a Stadium, on either side of which were two hemicycles, encircled by a colonnade. These hemi-cycles each contained three halls; one on either side was a swimming bath, the others were used for dramatic representations or as lecture theatres for philosophers, rhetoricians, &c. One of these halls, square on plan, shows an interesting example of the early use of the pendentive. The square is brought to an octagon, over which is placed a dome on pendentives.

At the south-western extremity were the immense reservoirs and furnaces which supplied the baths, fed by the Aqua Marcia, which was carried by the aqueduct that Caracalla built.

The water was stored in sixty-four vaulted chambers, two storeys deep and two storeys in height, each chamber measuring 50 feet long by 28 feet wide and 30 feet high. Through these the water flowed, was filtered, and became heated by a system of furnaces below, together with hypocaust floors and flue-tiles which surrounded the whole wall surface of the tanks. It was thence transferred underground to the baths through the substructure of the platform in leaden pipes, a distance of some 500 feet.

(To be continued.)

ILLUSTRATIONS.

SANCTUARY PANEL PAINTINGS ST. MARK, LEICESTER.

THESE paintings cover an area of 800 square feet, i.e., all the interior measurement of the seven large panels in the apse at the east end of St. Mark's Church. These are painted upon canvas (affixed to the walls) and are the gift of Mrs. Perry-Herrick, of Beau Manor, Leicestershire. The artist is J. Eadie Reid, Esq., of Paris and Gateshead-on-Tyne. The panels were dedicated "To the Glory of God, the honour of St. Mark, and in memory of William Perry-Herrick, and Mary Ann, his sister, Founders of this Church."

The theme of the paintings is "The Triumph and Apotheosis of Labour," an aspect of our Redemption in Christ.

The Church of St. Mark, Leicester, stands in a town of 244,255 souls (1909 estimate), of whom the greater number belong to what are termed the "working classes." St. Mark's is one of the chief working-class parishes of the town, and contains (1909) towards 15,000 souls.

In this parish there is represented all the tragedy and pathos, shame and horror of modern social conditions—infant mortality, child labour, under-payment or sweating of men and women, decadence of physical life, consumption, premature death, and a general low vitality, together with an almost complete absence of beauty and a dire lack of the graciousness and glory of life.

Therefore, in any scheme or design for decorating the sanctuary—the Holy of Holies—of this people's church there should be depicted (1) not merely Cherubim and Seraphim; (2) nor upon the other hand, merely the realism of the people's life—furnaces, factories, machinery, and physical poverty with its results—but rather there shall be depicted or symbolised:—

1. The Travail and Tragedy of Labour; by which phrase is meant the suffering of the proletariat or "working classes" pre-eminently but not only. For the travail and tragedy of Labour is part of the "fallen" state of our whole race, and not of individuals or of classes only. This tragedy affects the proletariat chiefly so far as poverty is concerned, but it affects and degrades all Labour whatsoever—working men, working women, and children, artists and art, worship and the priesthood, merchants and commerce, scholars and physicians, prince and peasant—for all and everything are marred by the organisation of society as we know it.

2. The Curse of Mammon.—The root cause of this travail and tragedy of labour is the organisation of society and commerce for the pursuit of riches, not for service and for good; for mammon and gold, and not for God. The lust of gold is the ultimate source of almost every industrial horror. "The love of money is a root of all evil." The Divine Pity

sees this—the tragedy and its cause—and therefore He reveals His mind and will in the Christ—the New Man—who demonstrates that Labour, like all human life, can be redeemed by love, and by love alone.

3. This Redemption of Labour by Love can be effected only by sacrifice. For love must penetrate the depths of this hell, to purge it and transform it. The element of suffering is already there—involuntary, brutally enforced, hopelessly endured. Love, though it sees, nay because it sees this horror and knows this shame, submits to enter therein, to transform the evil by good, until at last labour becomes what God intended—a free service of fraternity, rather than a repulsive, hateful task, enforced by the lash of the whip, or by the cruel spur of “competition” instigated by the lust of gold or by the pang of hunger.

Thus at last—through love and fraternity, realised in the re-ordering of society—labour, freed from its shackles, stands forth noble, upright, beneficent, glorious.

4. This Liberated Labour renders a Free Service and a Pure Offering of which alone can be said, “Work is Worship”—“Laborare est Orare.”

Then, and only then, is the life of labour “of” the kingdom of God—part of it, interwoven with it, consecrated and strengthened by it, one with it—when organised society, accepting industry and labour as spheres of brotherhood, build therein the altars of love in Christ. Then, and only then, will it be true for us, as once it was for the apostolic Christians, “neither were there any that lacked;” then, and only then, will excessive riches on one side, and attenuated poverty on the other, with all their tribe of attendant evils, pass away, and there shall be a divine community, the city of God, and the brotherhood of man.

5. This will be the Triumph of Labour; not merely of the proletariat, and of the manual crafts, but of the liberal arts; for all shall be one in Christ Jesus, Who at length shall reign in industry, as in His Church, over all supreme, and to Whom every kind of labourer (each in his vocation and ministry) shall render homage, making of his work a pure offering of fellowship and love, unto Him Who is Himself the

6. Apotheosis of Labour, the Lord of life and love—even Christ.

The following is the description of the carrying out of the theme written by the Vicar, Rev. F. Lewis Donaldson, after consultation with the painter, Mr. J. Eadie Reid:

I.

The general idea of the two outermost panels (i.e., the one on the extreme left and the one on the extreme right). In these Labour is suffering under tyranny and oppression, and is in travail and sorrow. There is but little looking upward, and gloom and despair prevail; though, even so, some faces are turning towards the light, a symbol of the beginning of redemption and reform.

The panel on the extreme right. In this, Labour is seen either carrying massive material or dragging some unseen weight, without hope or expectation, with bowed head and back. No face can be discerned looking upward, but all seem absorbed in the mere burden of existence. In the foreground is the figure of a fallen man symbolising Labour overwhelmed by its burden. The quiet, watchful figure above represents Mammon, oblivious to all but his own personal aggrandisement; bags of money are on his lap, and a grim callousness to the pain around him is expressed in his countenance and bearing. The dim figure of a woman in front symbolises Luxury in attendance upon her master, Mammon. Overhead is the Angel of Sorrow, bearing the globe of destiny, which is opaque, and in which, therefore, it is hard to read man's destiny. But a close scrutiny reveals a dim gleam which signifies, even under such conditions, hope of good to come.

Panel on the extreme left. In this panel, poverty, pain, and sorrow are shown in various figures, viz., in mother and child, father and daughter, husband and wife. In the extreme left corner a man is sitting, bruised and broken. He sees no hope, and contemplates nothing but death. A mother is striving to direct a young girl, her daughter, towards the light. A woman is trying to help forward a poor wretch, fallen and bandaged—her father. On the right is the kneeling figure of a man, his hands covering his face, weeping with bitter grief. Near him is a strong man, with uplifted hands, cursing his fate, while his wife tries to restrain and comfort him. Behind, to the left, is a figure representing old age in its weariness and pain. Two men standing higher up on the extreme left symbolise ancient Philosophy, contemplating abstract wisdom, but unable to initiate, or even formulate what is needed for reform, and expending itself

in fruitless speculation. In the distance, in this and other panels, the ever moving and necessary current of human life and labour can be seen. Men are stripped for oppressive labour with molten metals. The general conditions are bad, and yet, even so, a few faces are beginning to turn towards the source of light and of redemption. The dim figure at the side of this picture symbolises current society—cold and remote, careless, indifferent, and blind to the tragedy of Labour's lot. Above all is the figure of the angel of sorrow with the globe of destiny, in which, though opaque and mysterious, a close scrutiny reveals a gleam of light, symbolic of good to come.

II.

The general idea of the second panel from extreme left and second panel from extreme right. In these two paintings the redemption of Labour is proceeding. Love is developing fellowship and union, and is raising the conditions of earthly toil. Men and women may be seen earnestly assisting one another, and the general movement is upward, and faces are more generally turned towards the “Strong Son of God, Immortal Love,” Who is the source of the redeeming power.

The second panel from extreme left. The redemption of Labour is symbolised in this picture by a woman, outcast, neglected and scorned, who is being lifted up by others. Her rescuers (a woman leader with her co-worker in redemption) are directing her attention to the Christ, and her face is turned as if towards Him, from Whom the light suffuses her countenance. In the foreground is the figure of a young man tortured by doubt, worn by privation, but struggling against the prevalent conditions of society. Next to him is a strong man in the prime of life, capable of full enjoyment of labour and striving to break the bonds which bind him, so that he too may move toward the light. Next to him is a man, old and worn, his life spent, yet feeling that something still is lying in the beyond, and that the promise given has not been a vain one, and is still worthy of his faith. At the extreme right is the figure of a man who has grown hopeful of good, and is looking earnestly towards the source of all good. The prominent figure in this panel and the equivalent figure in the corresponding panel on the right represent the guides or leaders of men, of whatever kind, who are striving to enlighten their brethren, and to unite individuals and classes in the common effort of redemption.

The second panel on extreme right. The prominent figure symbolises those who lead or teach or unite mankind. A husband and wife are coming forward, signifying the redemption of family life. In the foreground are a miner, a shepherd and an agriculturist, representatives of three great departments of man's activity. Throughout this painting the idea of inspiration drawn from the Faith of Christ is symbolised by the upturned faces and the general attitude and tendency of the figures depicted. In the background, the struggle of Labour with unrighteous conditions of life is still proceeding, but the general effect of the symbolism of this painting, and of the corresponding one on the opposite side, gives the impression of Faith, Hope and Love, with a corresponding progress towards good and God.

III.

General idea of the two panels next to the centre. These represent the triumph of Labour, redeemed by Love, and able now to offer to the Lord of Love a free service and a pure offering in fellowship one with another, and with Him.

The panel on the left of the centre. Sculpture, as representing the plastic art, is symbolised by a man holding the model of a figure which is kneeling in devotion. Next to him is the author and student with his book, symbolising knowledge. The craftsman stands in the pride of physical energy, symbolising all the workers in the materials which the earth yields. He represents all the manual crafts. A man holding the model of a ship symbolises the conquest of the sea, and labourers of all kinds, who “go down to the sea in ships.” The woman worker engaged in the daily round and common task yet finds a glory, reflected from the Christ, in what may seem merely menial, but is really essential to the happiness of mankind. This figure, and others in the paintings, represent the millions of women engaged in industry throughout the world. Close by the woman, and on the common platform of mankind, is the king or ruler, signifying “principalities and powers,” and the labour of government. He stands crown in hand, acknowledging the homage due to the source of all authority, even Christ. The lowest figure here is the schoolmaster, as if to symbolise the fact that in the training of the young lies the foundation of every art and craft. This idea is balanced, in the corresponding panel on the right of the centre, by the figure of a mother and her

child. The mother and the teacher are the first in the education of mankind.

The upper part of this panel and of the next on the right of the centre represent the twelve apostles as sharers in the glory of their Lord. Other painters have beautifully depicted this glory by aureole of Cherubim. Here it is depicted rather by the first-fruits of His Kingdom, the workers of Galilee.

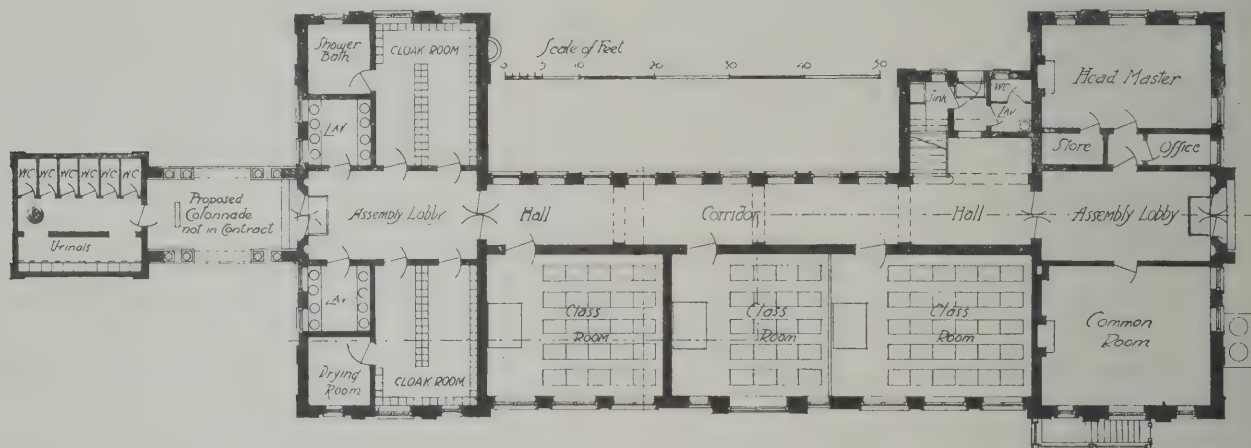
The panel on the right of centre. An architect offers his work, symbolised by the model of a church. By his side is the builder who, with the architect, symbolise all the arts and crafts of building. The next figure is that of a woman, representing the life of thought and culture. The glory of maternity and its service for God and man is symbolised by the figures of a mother and her babe. The liberal arts, painting and music, are shown expressing themselves through instruments of colour or form, endeavouring to translate the message they are receiving from the Eternal Word.

IV.

The centre panel. The Christ as the Apotheosis or Deification of Labour. Our Lord is represented as the source of

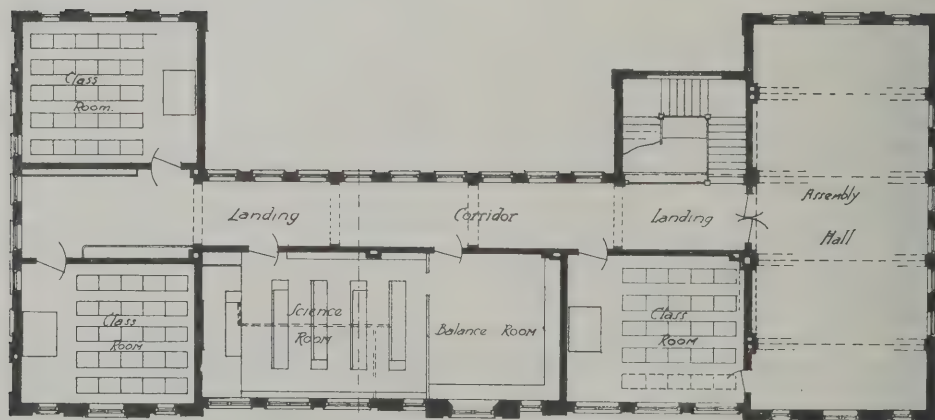
COUNTY BOYS' SCHOOL, MAIDENHEAD.

THIS design for the Maidenhead Secondary School for Boys was awarded the first premium in open competition, in which 145 designs were submitted to the assessor, Mr. R. S. Wornum, F.R.I.B.A. The school has recently been opened. It is erected on a site of four acres, on high ground overlooking the town, and provides accommodation for 150 boys. The plan is arranged so that further additions could be easily and economically added without disturbing the working of the school, or interfering with the general scheme of the design. The design of the building is an adaption of Georgian architecture, executed in red bricks of varying shades, relieved in its central parts by stone sparingly employed and roofed with red sand faced tiles. The school is planned on two storeys with all departments under one roof. Both floors have through corridors practically running from end to end. On the first floor is a spacious assembly hall, which is used as an art room also. The corridors are divided in their lengths by a series of arches and the floor paved with jointless flooring of a deep red colour, and the dadoes are formed of glazed bricks of a light golden green colour, with two narrow rows of small tiles to match of a neat design.



FIRST FLOOR PLAN.

COUNTY BOYS' SCHOOL, MAIDENHEAD.



GROUND FLOOR PLAN.

Light, and Life, and Love. He stands in an attitude of majesty, with uplifted arms, suggesting partly command, partly appeal, invitation and encouragement—"Come unto Me all ye that travail, and are heavy laden, and I will refresh you." And again, "My Father worketh hitherto, and I work." Behind the uplifted hands, and through the æther, shines the symbol of the cross, and the mark of His suffering may be traced in the sacred hands. He appears as the Co-worker, and Inspirer of all service in the travail or labour of mankind, as the One in Whom men realise that work is not merely a medium of fame or gain, but is in itself worship, and a return of the gift or talent which has been reposed in them, and which are a means of fulfilling the eternal purpose of God. Each act and every service, however humble, are potent to aid the divine purpose, if done in fellowship and good-will. In the picture the Christ is represented as coming with the glory of the dawn of the true life of mankind, while the Cross, glowing in the light of "the day of the Lord," symbolises the triumph of Labour, consummated through sacrifice, fellowship and love.

The heating and ventilation installation has been carried out by Messrs. Rosser & Russell, fireproof floors by Messrs. Homan & Rodgers, gas lighting and fittings by Messrs. Christie. The stone carving and plaster modelling in hall and also the principal rain-water heads are by the Bromsgrove Guild of Handicraft. The leaded glass work, entrance gates and metal works by Messrs. Humphries Jackson & Ambler. The furnishing is by the Educational Supply Co. to designs supplied by the architect. Fencing by Messrs. E. C. White, of Basingstoke.

The architect is Mr. A. Jessop Hardwick, F.R.I.B.A., and the contractor Mr. J. B. Seward, of Wokingham. The building was superintended by Mr. R. Squelch, acting as clerk of the works.

OXFORD COLLEGE SERIES—CHRIST CHURCH.

CONTINUING our series of views of Christ Church College we this week give illustrations of The Library and Peckwater Quad.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AT the conclusion of the Presidential Address at the Royal Institute on January 30 the following criticism of the drawings and other work submitted for the Institute's Prizes and Studentships was read by Professor C. H. Reilly, M.A., of the School of Architecture, Liverpool University:—

Mr. President, Ladies and Gentlemen,—To be asked by my fellow-members of the Council to join the band of those who have delivered this annual criticism is no small honour, and at the same time no small responsibility. There is a responsibility both to the Institute and to the competitors, and I trust that neither will resent anything I may say in my position of candid friend of both. For I feel very strongly that the exhibition before us in its broadest aspects is the best indication we have of the general state of architectural thought among the younger generation. Students' work, at any rate in England, follows very closely—much too closely, I venture to say—the trend of current architectural taste, and whether an exercise be supposed to be in the principles of Palladio, Vignola, and Chambers or not, the result is generally a pretty faithful reflex of the latest competition devices of our competitively successful architects. In the absence of any national system of training in design it could hardly be otherwise. A year ago it was my good fortune to see in America the designs for the Stewardson scholarship, which holds there a similar place to our Soane medallion. The chief difference, as it strikes me now, was not that the best work was better, but that in the hundred or more designs submitted for this one prize the general level of accomplishment was considerably higher than it is here. Among our students we have evidence before us to-night of many men of brilliant imaginative power and great artistic ability, but they seem to lack that technical accomplishment in design, that knowledge of architectural effects and possibilities, which is necessary for ability fully to justify itself. But if the best men suffer from lack of continuous training in design, how much more do the lesser? Indeed, the main advantage of schools of design—the only modern equivalent to consistent architectural tradition—is that the general level is raised. Everyone has remarked that in a time of strong tradition like the eighteenth century how little absolutely bad work was done, and the same results apply to the organised teaching of design which every country save our own now possesses. Facility in design, like facility in draughtsmanship, comes with constant practice. I know myself what a good exercise I find it scribbling compositions or details on the students' boards at Liverpool.

This may all seem a digression from my main subject to-night, but it leads to this suggestion, that the Institute which has now taken in hand the training as well as the examining of students should make training in design the keystone of its system. History, mathematics, construction, materials, everything else, should be subsidiary to what after all is our main excuse for existence. Instead, therefore, of a couple of small designs and an elaborate system of written papers, I suggest the Institute should substitute a minimum of papers and a series of designs to which the Tite and Soane might be a fit culmination. As it is, I think the winners of these prizes might be allowed to qualify for membership just as the Prix de Rome, *ipso facto*, obtains for its holders the diplomas of the Ecole des Beaux-Arts.

Turning then to the Tite and Soane prizes, the competitions for them as exercises in design are naturally and rightly the ones to which we attach most importance. Sketches, measured drawings, essays, colour studies, valuable as they are as means of study, all pale in interest before a single honest attempt to evoke the noblest function of the human mind, its power of imaginative creation. Ultimately, all works of art must live by their appeal to the imagination; that is the divine fire without which the cleverest rendering, the deepest scholarship are but negative accomplishments. Now there could hardly have been chosen two subjects making a more immediate appeal to the imagination than those for this year's Soane and Tite prizes—a bridge and gateway to a capital city, and a wooded island in a lake set apart for the solemn rites of burial. They are ideal subjects, and our students—and all of us for the matter of that—should be encouraged to dream dreams; so-called English common sense and love of compromise will follow fast enough in practical office work.

The Tite Prize.

I think particularly in the Tite prize has the Committee's choice of problem been justified. Some tell me this is not such a strong year as certain previous ones. I have not always seen the drawings, and worse still have never been a competitor, so I cannot say. But whether it is up to the standard or not, I feel we need not despair of the future of our art when we have among us men of the poetical temperament of "Ek Thanatou Nikos," or capable designers like "Catafalque," "Apex," and the

winner. The jury must have had a very difficult task in determining the result. Having set so fine a subject, were they by their award to throw Palladio to the winds and choose irrespective of all else the most poetical conception—the design which satisfied the spirit rather than the letter of their problem? It must have been a sore temptation, but English common sense has won, as it generally does, and the very capable design of Mr. Foggitt, "F. 13," has been placed first. It is, indeed, the most Italian design sent in, Bramantesque in general character. Mr. Foggitt has also made more of the Italian idea of a Campo Santo than the other competitors. Cutting a great wedge out of his island he has contrived a broad sloping way up to his chapel, flanking it on either side with arcaded terraces set back one behind the other. At the head of the slope stands the finely composed façade of the chapel, the dome of which crowns the island. The unobtrusive perspective hardly does justice to this effective approach. Where Mr. Foggitt has failed, I think, is that the idea of a lonely island set apart for the solemn rites of burial is hardly conveyed by his pleasant scheme, which suggests rather a happy secluded convent building set among its terraced vines on some sunny Italian hillside. Mr. Foggitt's drawings are somewhat dirty in execution.

"Catafalque" (Mr. H. Boddington, junr., 10% 10s. and hon. mention), who is placed second, sends a much better set of drawings, *qua* drawings, than the winner. I commend his half-inch detail as an example of how Classical architecture should be drawn, with a quiet pencil or washed-ink line, and geometrically yet tenderly shaded. He has designed for his main building a temple-like structure with a finely conceived portico, and has wisely placed it, as the Greeks would have done, some little distance up the hillside, leaving the mountain behind to form a background. The interior of this building is particularly good. Half-way up his long sloping approaches, however, stand two octagonal pavilions for columbaria, and these are rather a blot on his scheme. They suggest to me both by their shape and detail garden pavilions rather than tombs. But the whole conception, if a little long for the island, is quiet and dignified, and the detail, except for one or two lapses, such as the archway with a broken cornice and the pediments without any tie in the Newgate-like niches, is good and expressive. The perspective is a very pleasant drawing, embodying well the quiet serenity of the design; the buildings are seen in silhouette against a setting sun near the water's edge reposing ready to welcome the advent of the happy dead. To me the whole idea of this design is more truly Classical in spirit than that of any other.

"Ek Thanatou Nikos" (Mr. W. G. Newton, hon. mention), if he has failed to win the prize, will win his victory from life itself. A man so sensitive to the poetical possibilities of his art will gain happiness, and pain too no doubt, from all he undertakes, but at any rate he will live a real life. His two perspective drawings have the solemnity and mystery of an early Maeterlinck drama. I think his main building, with its high enclosed atrium, has something of the remoteness—the dignity combined with simplicity—that we find in the best Greek work. He has justified his use of Greek detail, if any justification were needed, by a quotation from Chambers, "It should always be remembered that the stream is purest at the head." His detail, indeed, shows considerable scholarship, especially in the row of monuments in his niches, each differing in design. It is a pity they have been so carelessly drawn. Greek architecture calls for the purest, most delicate delineation. Besides his central building he has a quiet retired landing-place, and a little village set in a fold of the cliff, from which rises a circular stair to the headland on which he has placed his temple. All these are interesting and romantic features in themselves, but they are not bound together into one architectural design, and the reason for this is the shape of his island. The author has assumed the shape to be that of a skull. It is an interesting idea though a non-architectural one, but that would not matter so much had it not hampered his design. It is really akin in spirit to the triangular lodge at Rushton Manor to symbolise the Trinity, or John Thorpe's scheme for his own home in which the plan spelt I. T. It is a pity so clever a designer should have been carried away by such an idea.

"Apex" (Mr. V. O. Rees, hon. mention), to whom a certificate of honour has also been awarded, sends a very sensible set of sepia drawings, a little sloppy in finish due to their pencil line. Cockerell and our great Classic architects always used a thin ink line. "Apex" has absorbed the whole island in his scheme, but has handicapped himself in the eyes of the jury by levelling half of it to the water's edge to form an acropolis of the remainder. His architecture, however, is good and consistent in character, and he gets the fine effect of a processional way lined with monuments leading from his landing-place to the foot of his acropolis. What happens then is not quite clear, as no staircase is shown. Two hundred feet above though are a group of good

buildings surrounding a central hall modelled on the tepidarium of a Roman thermæ. The entrance to this has a couple of pylons with a colonnade between. It is here, as seen on the detail drawings, that the design is a little weak. After passing through a more or less Greek portico in-antis these pylons, reminiscent of the Grand Palais at Paris, strike a jarring note. I would recommend to "Apex," and, indeed, to all who do not know them, the collection of Ecole des Beaux-Arts drawings of the sixties, seventies, and eighties, published by the "Intime Club" of Paris, and called "Croquis d'Architecture." Here, among a certain amount of bad Gothic, you can dig out all sorts of monuments, to each of which the architects of the Greek Revival, from Garnier to Pascal, have given, what only Frenchmen seem able to do, the appropriate architectural expression. I found these drawings in use in each American school I visited.

Perhaps the schemes I have mentioned form the first class. The next, not far behind, would include "Red Diamond," "Charon," "Fate," "Naos," and "Catacomb." The first has the good general idea of using Greco-Egyptian detail for suggesting the attributes of death. He, too, has absorbed the whole island and crowned it with a monument. Although this structure is coarsely detailed, and the order even grotesque, I feel it possesses character, and character of an appropriate kind. One may be inclined to laugh, too, at "Red Diamond's" post-Impressionist perspective, but, like the pictures at the Grafton Gallery, a sense of its uncanny strength remains with you. "Red Diamond" will soon realise brutality is not the way to express power, and that perfect control and refinement of detail are its real complement, whether in a steam-hammer or in the Parthenon.

"Fate" crowns his island with a rather gay but well-drawn and well-detailed French dome carried on three terraces. His perspective is poor, but it is largely compensated for by the delicately drawn half-inch showing good knowledge of French eighteenth-century detail. It was a little unnecessary though to add French nursemaids and poodles to his main elevation.

"Charon" has placed a finely conceived Pantheon-like chapel on the apex of his island, but from want of time probably has not been able to finish his drawings. It is difficult to resist the feeling that he has employed his baby brother on the perspective. The poorest part of his design is the rococo terrace with vaults under it, forming docks for boats.

"Naos" has also some finely felt Greco Egyptian detail, highly suitable to the subject, if not according to Palladio, which is well and delicately drawn on the eighth-scale details, but poorly and clumsily on the half-inch. The general outline of his main building, with its reversed curve in the cupola, is weak. The plans, perspective, and elevations show traces of having been coloured at night.

"Catacomb" shows a building with four corner features and a dome, making a successful and thoroughly Italian composition. His general plan has not been worked out, but on his fine, if rather theatrical, perspective a good double circular staircase approach is seen, solemnly lined with cypresses. His detail is a little dull, though founded correctly enough on Chambers and Somerset House.

"No. L," has shown in a careful set of drawings a small Italian cathedral, with a circular arcade behind it. It is not quite in the grand manner, however, to line the processional way with a series of gardeners' cottages.

"Geometer" and "Gondolier" both try to fit elliptical colonnades to their building, after the manner popularised by Mr. Fulton in a previous competition. This is an example of the bad habit I referred to of relying on each other's washing for a living. "Gondolier" submits a design for his burial-ground full of light-hearted gaiety. You approach his casino-like chapel through a rococo portico from the White City, from which, too, his twin towers might have been borrowed. He is a clever draughtsman, though, and his perspective is one of the best in the room.

"Spero Meliora" will justify his motto. He shows in a good set of wash-drawings a rather dull town-hall-like building, with an Ionic pergola for a Campo Santo.

Lastly, "Dust and Ashes" has sent a little wash-and-pencil sketch perspective, in which the picturesque boatman we know of old—from copies in our first dame's school—is taking in his gondola two peasant ladies for a picnic in the cemetery. It is, as you can imagine, a charming early nineteenth-century water colour. "Amaryllis," on the other hand, shows all the soapy, bad effects which can be got by combining a heavy black line with colour. The detail, I am afraid, suggests terra-cotta and the music hall, in the shades of which, perhaps, this sort of Amaryllis was designed to sport.

[—] *The Soane Medallion.*

The Soane has not produced this year to my mind so good a competition as the Tite, either in numbers (12-19) or in the

general quality of the work, yet in these days of civic design an entrance to a capital city should have been an attractive subject.

"Civitas" has sent in a thoroughly Beaux-Arts set of drawings, even to the gold borders and the carefully composed frontispiece of details. The plans, sections, and elevations are all made things of interest in themselves. The draughtsmanship, if somewhat uneven, reaches in places a very high level indeed. The drawings are shaded throughout and made intelligible to laymen. In England we are wont to play up too much to the man who boasts he can never understand a plan, and I am sure the public appreciation of our art suffers in consequence.

"Mauerthor" has had an honourable mention given him for a clever essay in François Premier architecture. The Soane is not restricted—unfortunately, I think—to the fine Classical architecture practised by Soane and his contemporaries. It is therefore open to anyone to send in what the Americans would call an essay in archaeology, and in this case it has been done with American thoroughness. The main gable, well shown on the half-inch drawing, exhibits all the varying scales, the uncertain grasp of *motifs*, which characterises such early work when ideas which since have blossomed were only in the bud.

"SLab," who also receives honourable mention, submits a very modern design in the latest *Daily Mail* vernacular. The draughtsmanship of his geometrical drawings corresponds. It is the clever draughtsmanship of the competition expert. Neither in it nor in his design is there, however, any unity of idea. Both are full instead of clever slick touches. Indeed, "SLab" seems to me to be in danger of becoming the clever person whom our present want of system in teaching design leaves stranded. If he is not careful he will fall into Mr. Imre Kiralfy's hands, and design gateways for White, rather than Capital, Cities. But it will not be his fault. His perspective, which is full of colour and fine feeling, shows him to be by nature a genuine and considerable artist.

"Harlequin" has to my mind the most solidly architectural scheme and shows it in sensible sepia drawings. His perspective reveals the fact that he has not quite realised that his main proportions should start at the bridge, not at the water level. But for this fault—a cardinal one I admit—he might have received a different place.

"Black Cat" has laid out a fine circular *place* on the city side of his gateway which is approached by a miniature Waterloo Bridge of one short span. The *place* is half surrounded by arcades which look weak on plan. The main building is quiet and good except for a very broken attic over the entrance.

"Yellow Bird's" scheme, with a central feature somewhat reminiscent of Hyde Park Corner, is quietly drawn in rather an old-fashioned way which seems to suit his architecture. "Journey's End" meets you with a great pylon in which Assyrian, Classic, and Romanesque *motifs* are mixed but hardly blended. I wish his architecture were as good as his draughtsmanship. "Horatius" also sends a somewhat bastard design in which a Romanesque bridge leads to a tower with new art buttresses and Egyptian sphinxes crowned with an Ionic garden pavilion. "Jemador" at least has courage. He shows a building in buff terra-cotta.

The Grissell Prize.

The Grissell and Saxon Snell prizes are the only others offered for design. The Grissell is given for construction rather than pure form. The subject was a large skating rink to be built and roofed in wood. Unfortunately none of the competitors were adjudged worthy. "Oregon," whose building is quiet and satisfactory, has certainly attempted to design a novel form of roof. He has bifurcated his trusses above the hammer-beam, branching them on diagonal lines, which gives somewhat the effect of cross-vaulting, and at the same time braces the roof against wind pressure. If this roof would stand up—and I am assured by authorities it would not—it would certainly afford a striking and interesting interior. I think as an example of the "architecture of adventure" it deserves some credit. The drawings, too, are well made and the roof construction clearly explained. The remaining designs are not very happy.

The Saxon Snell prize has not been awarded.

Turning now to what I may call the research section of our prizes we come first to the Institute Silver Medal for measured drawings.

Measured Drawings Medal.

Seeing that the Pugin is worth 40*l.* and is devoted to mediæval work, I wish the Institute could see its way to increase this medal from 10*l.* to a like sum, and confine it to Classic and Renaissance architecture. Frankly what is wrong with a good deal of our Classical architecture to-day is that it is still too Gothic. Until we have devoted as much time to the study of Classic forms as our predecessors did and our Pugin enthusiasts do to-day to Gothic ones we shall not make headway. At the same time we should learn to draw them in a style suited to their

character. Classic architecture is an affair of light and shade rather than of line. It should be rendered therefore in light and shade, and the thick line drawing, which we owe to Burges should be kept, if kept at all, for Gothic work.

"Ethandun," the winner, has indeed sent shaded detail drawings of the Gothic building he has measured, and very well they look. His black line elevations are not so pleasing, and his surveys a little careless. The latter, however, are supplemented by many sheets of full sizes plotted on the spot, for which he deserves and has no doubt obtained great credit.

"Nihil sine labore" justifies his motto in the six strainers he has sent of St. Lawrence Jewry, a Classical building, but shown in the strongest of competition black lines. Strong as these drawings are, they are bound to have the defects of their qualities. The carving, well drawn, has a totally wrong value, and an enriched moulding in effect counts more than a whole column. But it is not on such a question "Nihil sine labore" has been judged. He has not submitted his surveys.

"Farnese," "Cam," and "Oxonian" all send rather tentative drawings, some in wash and some in line, and the surveys are not as good as they should be. "Farnese's" perspective of the much-measured Somerset House Strand entrance is a good piece of work.

The Pugin.

We come now to the Pugin, and a very difficult task it must have been to make the award. Some drawings are crisper, some more spotty, some water-colour drawings are cleaner than others, but beyond that what can one say? It is a matter more of craftsmanship and industry than anything else. Mr. J. B. F. Cowper, the winner, who is to be congratulated on winning the Ashpitel prize as well, is a hardworking north-countryman. He sends six good perspective sketches of towers and spires, three in line, three in colour. He has measured several parts of buildings in the special way Pugin students measure. He has, however, included among these latter the façade of some almshouses at Nantwich, which but for the date, 1638, one would imagine were modern artisan dwellings.

Mr. Hepworth sends in the most work, and in an elevation of the porches of Rouen Cathedral which he has measured maintains an extraordinary sharpness of pencil line. One cannot help wondering whether such laborious work is quite worth while, and whether the full-size detail of a single niche would not be more valuable than these hundreds of niches all drawn with the same staccato touch. Mr. Hepworth, though, has measured more than the other competitors, and this is to his credit. Personally I think one measured drawing is worth a very large number of sketches. It may sound heretical, but I cannot help thinking that sketching, in spite of the Pugin studentship, is by itself a very dangerous pastime. A man who has sketched the skyline of a building and a little detail over the door is apt to think he knows all about it. Perhaps the blight of picturesqueness which has settled on our architecture could be traced to the enthusiastic sketching of twenty years ago.

Mr. Clough has made a number of straightforward yet delicate drawings and some admirable colour sketches. He must have run the winner very close—whether behind or in front I need not say. Mr. Hadwen's shows evidence of a good deal of hard work, but his draughtsmanship is not very sympathetic. Mr. Alison sends good work too, but is a little uncertain in his details.

The Owen Jones Studentship.

The Owen Jones Studentship has produced two good sets of drawings by Mr. Bellis and Mr. Oakley. Perhaps Mr. Bellis, with his power of drawing the figure, is the stronger man. His drawing of the Pompeian decoration from the Castle of St. Angelo is particularly good. His colour though is not as good as his draughtsmanship, for some of his drawings suggest the reproductions in Mr. Owen Jones's book rather than the thing itself. Mr. Oakley is more daring than Mr. Bellis, in that he submits several sheets of original designs. Attempting more he has made a high failure rather than an easy success. His decoration often conflicts with the lines of his architecture, and I am afraid his panels would reduce his council chamber to a restaurant. To reconcile again great painting and great architecture is however the work of a giant, and no one in our time seems likely to accomplish it, unless it be Mr. Augustus John.

Arthur Cates Prize.

Mr. Henderson, who wins this prize, sends some charming sketches chiefly from Italy and a design for a Carnegie library. The latter, to my thinking, rather negatives the former. His best drawing is of Peruzzi's delightful Santa Maria Carcere at Prato. Why, I wonder, has Mr. Carnegie's personality ousted that of Peruzzi from Mr. Henderson's mind?

Mr. Vey's drawings are not so good, though perhaps his design

is better. Bay windows, however, running through several storeys are difficult things to harmonise with a really strong cornice.

The Institute Essay Medal.

The essays have been left to the last, not, however, because they are the least important. Indeed, of the research work the reverse is the case. The winning essay, Mr. Honeyman's, on the design and construction of belfry stages and towers, is a very valuable piece of real research work, showing throughout intimate first-hand study and a thorough knowledge of his subject. Although only two essays have been submitted, the winner's amply justifies the Council in changing the type of essay subject to one involving research and scholarship. On the other hand, I do not like to see the more philosophical type of subject entirely abandoned. Could not we have both? Different types of men would be attracted, the man of ideas—the designer, in fact—to the one, the scholar to the other. I beg students not to look down on the essay prize. Men who can see fine shapes in their imagination should be able, and generally are able, to write in good literary form. I frankly do not believe in the great inarticulate artist. He is apt to be a humbug. The biggest men from Michel Angelo to Reynolds, from Reynolds to our best modern architects, have all had this double facility of expression. I believe very strongly that the one form of expression helps the other, but we must never make the mistake, as old as Vasari and even Vitruvius, of accepting the one in place of the other.

Sir ASTON WEBB said he rose to make a voluminous proposal; he wanted the audience to pass a vote of thanks to Mr. Leonard Stokes for his presidential address, and then to Professor Reilly for his address, and lastly to ask the President to accept on behalf of the Institute a portrait. They had listened to Mr. Stokes' address with a very great deal of pleasure, and they hoped that as much pleasure had been given to him in the writing of it. From the applause he gathered that one of the paragraphs which gave the students the most pleasure was that suggesting for next year a competition for the best address and a prize of twenty guineas—a prize far in excess of what any president has ever received for his efforts. It was almost a pity that Mr. Stokes had not asked a student to reply that night, for if a student had been given leave to frankly express his opinion on the President, the Council and the Fellows of the Institute, the result would have been much more interesting than anything he (Sir Aston Webb) was likely to say. Mr. Stokes next advised them to cultivate youth and to keep it green. This had been so well done by Mr. Stokes himself that he was certainly the best one to advise others; and if he had the Elixir of Youth or would tell how it was done they would be pleased to adopt his principles and to carry them out to the best of their ability. In case the advice should be apt to make youth too elated and the older members too despondent it was well to remind them of the great address which Mr. Ruskin gave to the Architectural Association, in which he declared that the highest nobleness was usually found among the aged, the infirm and the poor, and not in the strong arm of the leaders. That thought must afford great satisfaction to those who were not still young. Reference had rightly been made to the great advantage it was for the audience to have the designs around them when the criticism was being read, though it was allowable to regret that the committee room could not still be used as of old. He would venture to congratulate the honorary secretary (Mr. H. T. Hare) on the very admirable way in which he had exactly met the requirements of the Royal Institute. In the President's address there was a certain touch of seriousness and encouragement to the student. Architecture was a serious matter and not merely a joke, being something in which a man might worthily spend his life. Architects were fortunate in being engaged in an occupation worthy of the very highest efforts of a man, for they worked not only for the pleasure but also for the convenience and well-being of the world. They were proud of being connected with the profession, and a student should work so that in due course he will take an active share in it, doing everything in a way becoming to an English gentleman. The students were lucky in having so competent a critic as Professor Reilly to criticise their designs. He had done it without fear and without favour. Sometimes the authors might have felt he was severe, but they all must recognise it was done in a kindly and friendly spirit and by one who knew. It was to be hoped that those who had been criticised would not take it lying down, but would turn up next year with a still finer design, and perhaps win the prize. In conclusion he had on behalf of the subscribers very great pleasure in asking the President to accept for the Institute the portrait of their old President, Mr. Ernest George, A.R.A. Mr. George was so well-known to them and had so lately occupied the chair that it was unnecessary to refer to him at any length. They knew him as Ernest by name, earnest by nature, and still

more earnest in his work. They all knew him, and all loved him as well. Mr. Ernest George was an artist all round, and one who had always looked on his work from that point of view—a point of view from which an architect should look on his work. The portrait was a very excellent and faithful likeness, the pose of the hands being to the life. The Institute was very fortunate in having had Sir Hubert Herkomer to paint that portrait, and it was one that would grace the walls as fully as the other presidential portraits had done. The Institute was indebted to the painters who had in the past come to do those portraits in such a liberal way, and he hoped their best thanks would be conveyed to Sir Hubert Herkomer and their high appreciation of having such a work on their walls.

The portrait was then unveiled.

Mr. SELWYN IMAGE, Slade Professor of Fine Arts, Oxford, in seconding the vote of thanks, confessed that the University of Oxford did not show all the recognition it might to the Fine Arts, and most especially to the Queen of the Arts—the art of architecture. Although his knowledge of architecture technically was really nil, he did claim to have (as much as any layman could be said to have) the sense of what was beautiful in architecture, and no one could have a greater idea of its value. So far as his poor efforts would allow, and spurred on by the words of the President, he would do his utmost to bring home to the University the enormous importance of recognising architecture as the very Queen of the Arts.

Mr. ERNEST GEORGE, A.R.A., who was greeted with great enthusiasm, said it was very gratifying to a president, who for two years had done his poor best, to meet with so flattering a reception. It was a great honour to have his portrait included among the fine collection of those who had done good work for the Institute.

Mr. Leonard Stokes and Professor Reilly having acknowledged the vote of thanks, the meeting terminated with the presentation of prizes and certificates to the successful students by Mr. Leonard Stokes the president.

GLOUCESTERSHIRE ARCHITECTURAL ASSOCIATION.

THE fourth annual general meeting of the Gloucestershire Architectural Association was held on Thursday, January 26, at the Northgate Mansions, Gloucester, Mr. H. W. Chatters in the chair, others present being Messrs. Wood, Trew, Dancey, Overbury, Malvern, Jones, Crisp, Iredale, Paterson and Davis. Mr. Walter B. Wood, of Gloucester, was elected President for the coming year, and Messrs. H. A. Dancey and T. Overbury Vice-Presidents; Messrs. W. F. Jones, S. H. Healing and J. Fletcher Trew were elected Members of Council; Mr. H. W. Chatters was appointed hon. corresponding secretary for Cheltenham, Mr. G. P. Milnes for Stroud, and Mr. Harold S. Davis hon. secretary and treasurer. An interesting programme was arranged for 1911. Hearty votes of thanks were passed to the retiring president, vice-presidents and officers for their services to the Association.

THE ART OF THE WOODWORKER.*

By Mr. HENRY TANNER, F.R.I.B.A. (*Official Report*).

IN choosing the title of my paper I selected it as above, and used the term art as I wished to indicate that I was approaching my subject from the point of view of design and not of construction, as I feel that my audience are better informed on this matter than I am; but I must further amplify this title by saying that I intend to treat it architecturally, touching on the various different phases in architectural English history, and showing how one branch, *i.e.*, woodwork, developed along the same lines as the art of which it was a component part.

I propose to deal with my subject by sketching as concisely as possible the progression in design especially as regards woodwork in England, both internally and externally, and touching on the various periods, their causes and effects.

Wood was, of course, primarily used constructively, and the early forms of design were evolved naturally from a constructional basis, and the craft of the woodworker or carpenter was one of the most important of the various trades, each its own designer and artificer, which in the early times composed the architecture of the country, that is, during the periods anterior to the time of Inigo Jones, when the architect became recognised.

In the early times wood was used as the main building material in the form of half-timber work, with plaster and wattle filling, buildings erected in this way being especially prevalent in the well-wooded districts such as in Kent, Hereford, Cheshire and

Essex, the means of traction being so limited that the building materials nearest to hand had to be utilised, while where stone and later on bricks were to be got wood was only used sparsely even in decoration; but later when brick and stone were generally available and wood scarcer, the latter material fell into disuse except for internal construction and decoration pure and simple, for panelling, fireplaces, screens and similar features.

In tracing the history of architectural design in this country the first period of which we have any considerable knowledge is the Norman in the latter part of the eleventh century, though in all probability the first principles of the style had been introduced before the Conquest, and the ground prepared, which accounts for the ease with which the Anglo-Norman architecture sprang into such a flourishing state in so short a time. The remains in this style are unfortunately for our present purpose nearly all in stone, though there are I believe a few wooden roofs in existence, and I show here a Norman screen from Compton Church, Surrey, which is the only specimen of woodwork of the period which I know of.

The Norman work, being really only the last phase of a dying style, did not last long on these shores; the debased Romanesque gave way to a very real and live product of our own country, not however without a struggle, during which the Norman and Early English work appeared blended together in the same buildings.

The examples of woodwork of the Early English period are nearly all simple in treatment, and are found in ecclesiastical work in roofs, doors, bench ends, &c. It is in fact only this type of woodwork that remains to us and with which our knowledge of the style is so intimately connected. The domestic life of the middle ages was very rude, and decoration of woodwork except for ecclesiastical purposes and rough furniture seems never to have been considered, the disturbed state of the country during the twelfth century placing the consideration of defence before comfort or art of any sort.

The golden age of mediæval art was the time of the first three Edwards, *i.e.* during the fourteenth century, and it is clear that ornament and decoration were attracting attention in all their branches. At Penshurst there is an elaborately carved hall screen in the Decorated manner and a fine wooden roof to the main hall. The screen from Rye Church is apparently early, but the carving seems to be of different dates and later. The porch at Boxford Church is an extremely unusual and interesting piece of woodwork with wooden tracery throughout, and I might mention other examples of Decorated work at Sudbury, Christchurch and Winchester.

One of the most wonderful uses of wood in the Gothic times was in the fashioning of the church roofs, one of the earliest forms being as at Stuston in Suffolk, with every rafter cross braced and the foot framed on to the wall plate with cross pieces meeting the rafter on the outside of the thick wall, simple and without carving; then came the tie-beam type, and the next development the marvellous hammer-beam roofs which are to be met with in such numbers in Norfolk and Suffolk. There are two fine examples at Swaffham and March rather similar in character, and a later one with pendants in lieu of the angel so much used before as a finish to the hammer-beam is to be seen at Eltham Palace.

The churches were now decorated with a profusion of carving, screens, font covers and bench ends; wood being perhaps the medium most largely used by the carver to show his ability in design and craftsmanship, such intricate carving as at Gidleigh and Lavenham testifying eloquently to the skill of the artificer in his work.

We have now with these last examples arrived at the third and culminating stage of Gothic architecture known as the Perpendicular, owing to its chief characteristic being the prevalence of perpendicular lines crossed at right angles by others little less pronounced, as at Walsoken Church, Norfolk. The detail, however, in the end became complicated, profuse and minute, showing clearly that decadence in taste which is the sure sign of the passing of a style when mere ornament applied in abundance is considered an advance on good design although less elaborate.

In the reign of Henry VIII. early in the sixteenth century the influence of the Renaissance was first felt in England with the introduction of Italian workmen into the country. Their work consisted chiefly of the designing and carving of detail and ornament superimposed on the Gothic foundation, and there are some very good examples of their work still extant, as in the roof to the great hall at Hampton Court Palace which had been started by Cardinal Wolsey; in the choir stalls at King's College Chapel, Cambridge, that crowning triumph of the Gothic period; at Romsey Abbey and at Herne Church, in all of which the Classic character of the detail is most pronounced.

* A lecture delivered at Carpenter's Hall, February 1.

Though the introduction of Classic detail was so important and so far reaching in its effect, owing to the prejudice against the foreign workmen and the wide difference in this style from that in which the English builders were accustomed to work, the new manner as imported straight from Italy never took root, but the short reference made to it above is necessary as an historical link.

It was the next development of architectural ornament which left its mark on so much of the sixteenth-century work in the style known as Elizabethan. This work was the outcome of the German influence in this country, introduced more by literature in the form of pattern books than by the actual workmen themselves, though the prejudice against foreigners was not so strong towards the end of the century and intercourse between these two countries was extensive.

The Classic work as seen through German glasses was florid, overloaded and bizarre, but it apparently appealed to the English worker of the day, who adopted the style of work but reduced it to a more reasonable standard, and though ungrammatical and quite unable to bear analysis from a Classic point of view the adaptation of the German manner was the inspiration for some of the most picturesque woodwork which has been produced in this country.

Typical examples of this work are the screens from the Charterhouse in the hall and ante-chapel, built in 1571 by Thomas Howard, Duke of Norfolk. The chapel screen especially displays the source of its inspiration in the debased sloping pilasters and the perspective ornamentation of the panels. The one from the hall has half pilaster, half caryatid embellishments to the upper storey or attic which are well known features of the style, and of which we shall hear more in reviewing the Elizabethan work later.

It would now, I think, be best to consider the various stages in the development of design in panelling from the Gothic times onward with the allied decoration as well, as it formed one of the most important features from 1500 to 1800 in which wood and wood-carving were employed.

The panelling of Gothic times, or seelyng as it was then termed, was previous to the year 1500 composed of far heavier scantlings and larger panels than the later work previous to the time of Jones and Wren, being generally constructed of uprights three or four inches square as far apart as twenty-four inches, and with cross pieces even further separated, and the panels of one thick board and the mouldings if any scratched on the rails and styles, and dying away before meeting the cross pieces. The upper panels were frequently treated with carving and painting, the lower ones being left plain, as in the screen at Haddon in the hall, and at Rye Church.

The most prevalent type of decoration over the surface of the panel was the linen-fold pattern, which was treated in a great variety of ways. The chief differences were in the arrangement of the folds and the shaping of their ends, and there are some very good examples at The Vyne, Basingstoke, and Bramhall Hall, Cheshire. As time progressed the panels became smaller and the framing less bulky, and in Henry VIII.'s time the panelling was much ornamented with carving such as heads and heraldic figures and emblems, as at Haddon and Compton Winyates, which also shows the linen-fold decoration; the mouldings also became larger, those on the verticals being worked in continuous lengths and fitted between the horizontals and stopping against plain faces left for this purpose, a troublesome and laborious method but an advance on the earlier one.

The next system was to carry the moulding round the whole panel, working the mitres on the rail, involving tremendous labour; and after that we come to the time when the mouldings were run separately, cut to a mitre and planted on the styles and rails, as in the dining-room from Haddon, thus allowing the framing to be run in convenient lengths and saving great labour in stops and mitres, though a better way still was afterwards employed, that was to work the framing all in moulded lengths and then notch out the rails to take the uprights, as in the work at St. John's, Oxford.

The Elizabethan panels and framing alike were often covered with carving, but it was flat and without modelling as at Croscombe, which also shows a very favourite treatment of the period, the semicircular arch and impost, all richly carved.

As the panel became smaller, ornamentation decreased and decorative effect was obtained by the variety in shape and the grouping of the panels and by the introduction of pilasters and entablatures as at Haddon long gallery and at Broughton, though carving was still used but not in the same profusion as formerly, the gallery at Haddon being exceptionally rich.

In Jacobean work the panelling was in itself simple, but the entablature was generally enriched with plaques, panels and the pendants so typical of the period, but the ornamentation was centred round the doors, fireplaces, and such like features.

The interior features of the periods we have had under review were of immense variety, and it is not by any means easy to tell their dates by the ornament, as this varied so much in different localities, and throwbacks often occur as at Broughton; also the output of domestic work during Elizabeth's reign was prodigious, wood being the building material most favoured, as it was the most plentiful, though the possibility of a shortage was foreseen even then.

No review of this subject would be complete without mentioning some of the elaborate hall screens for which the English homes have always been so famous, from the simple Gothic example at Haddon to the elaborate specimen at Middle Temple Hall (1570).

In the screen at Wadham College, Oxford, we have one of the most typical examples of a hall screen of its time, *i.e.* about 1610. The screen was a recognised feature of the hall, separating it from the entrance and the kitchen; it was generally the medium for elaborate woodwork and carving. At Wadham the elements of Classic knowledge are quite apparent, but the Renaissance proper was yet far beyond the grasp of the average builder and too severe for him to handle. It was only through the Dutch and Germans that the style got a foothold here, though I am glad to say the florid examples our forefathers based their methods on were considerably purified and their wild vagaries modified before being adapted.

The use of the orders is fairly correct and the mouldings of the entablature good in proportion, but when we look at the curious carved finials along the gallery front with practically no connection with it, we realise at once the source of the foreign influence. The flat strap work carving which you see in these examples was characteristic of Elizabethan work and was generally coarse and ill designed though rich in general effect. Hatfield and Sydenham are both good examples of the grand staircase of the end of the sixteenth century and beginning of the next. The former shows well the most favoured features of the designers of the day—the huge carved newels and finials with the amorini and heraldic terminals, the flat pilaster-like balusters and heavy handrail and string constitute a staircase well worthy of the stately mansion of which it is such an important feature.

At Compton Winyates the fireplace and panelling show the later woodwork of the style; the sloping pilasters, pulvinated shelves with their applied ornament and the lozenge-shape panels, all of which are well known features by which the date is easily recognised. Another very interesting late example from Broughton Castle is an internal porch, a feature which we find in no other period, arranged to allow access between other rooms. This particular one was not built till after the Restoration, 1670, and is a distinct reversion to the earlier style, but with the same typical features, with far less vigour of handling.

The next phase in English design, the Jacobean, is one of greater refinement and better proportion; the ornament and carving is not so lavish as in the earlier work when every available surface was wrought.

The relation of the various parts to a coherent scheme for the whole room is more noticeable, though the work still possesses that quaint and ungrammatical charm of manner which always appeals to us.

The Strangers' Hall at Norwich has a very interesting and unusual staircase in the bay window built in 1677. It is very picturesque both from position and design, with the carved pendants between the balusters and the heavy newels, and Brancepeth Church has a pulpit of about this period, a particularly elaborate example.

A good Jacobean fireplace is the well-known one at St. John's, Oxford, about 1631, which is quietly treated, and the one from the Reindeer in Banbury, which is of a somewhat later date, has some very good panelling and well carved cartouches, though there is one unsatisfactory feature that we cannot help noticing in both these examples, *i.e.* the centre division and pilaster.

We must now retrace our steps to the end of the Gothic period to give some time to the consideration of a separate chapter in the history of English woodwork, which is the external half-timber houses which were built in such large numbers in certain districts and called by many different names in the various localities, such as post and plaster, magpie, black and white, and half-timber, and we may safely say of those now remaining that they form some of the most picturesque architectural monuments which we have. An early example of half-timber work is that at Stokesay Castle, and I must plead guilty to mentioning it more from the pictorial point of view and general charm of composition than from possessing any peculiar interest as woodwork.

Ford's Hospital at Coventry is an example of the high standard of excellence to which the half-timber work of Gothic times was brought, with its delicate buttresses and pinnacles

carved on the face of every upright, the decorative tracery to the windows and the elaborately carved bargeboards. This building dates from 1529 and was built by William Ford, after whom the building is named; it is quite Gothic, and so is also the well known Guildhall at Lavenham, built about 1550. The lateness of the period of this house is shown by the window heads; the elaborately carved corner posts are well worthy of note also the nicely proportioned frieze of windows to the ground floor, and the whole building is a good example of the best Norfolk and Suffolk work.

The half-timber work of Cheshire and the neighbouring district was much more elaborate than in the southern counties, Presbury Old Hall being a good example of the general type of design, while Moreton Old Hall is, I suppose, one of the best known and most charming buildings of its kind that we possess from the point of view both of environment and design. The detail here is still Gothic, though the imported influences were even here beginning to make themselves apparent in such details as the pendants and brackets. Some if not all of the buildings were designed and executed by Richard Dale, a carpenter, who was clearly still under the influence of the English tradition, though the foreign influence was beginning to have its effect.

Another building of a very similar type is Handforth Hall, and as a specimen of the work of one of the best known English master builders of the West country there is the porch to the school house at Weobley, the work of Robert Abel, who was responsible for a large amount of timber building in this district, and in the rudimentary Doric column may be seen the signs of the approaching change.

The picturesque Kentish farmhouse at Wick, near Headcorn, and the Guest House at Lingfield possess the chief characteristics of the half-timber work of the home counties; it was never elaborate as in the West; the coved soffits, cusping and curved braces worked into patterns are not to be seen here, but simply the vertical and horizontal timbers and the curved brackets to the eaves which are such familiar details, and I cannot leave this branch of our subject without giving one example of weather-boarding, High Haldon, which was so much used in our southern counties at one time.

The half-timber work in England practically ceased in the seventeenth century, giving way to structures built of more permanent materials such as brick or stone; and owing to the scarcity of timber which was officially noticed in the sixteenth century, when (1605) a proclamation was published in London notifying that all new houses in the city were to be fronted with brick or stone.

After the Jacobean era a great change came over English architecture, brought about by the genius of one man, Inigo Jones, to whom we owe the introduction of the Renaissance proper, which altered the whole trend of our art; and he marks also another important epoch, which is the severance of the architect from the artificer.

The type of woodwork and carving began to change from this date, the Classic treatment gradually becoming the accepted style, and it is wonderful to think of the possibility of such an entire change of type in one step, as for instance to the staircase at Forde Abbey, with its elaborately carved balustrade panels, from the Elizabethan work at Hatfield. The character of panelling generally changed from this time; the panels became very much larger and the mouldings more elaborate, and what was merely a wooden wall covering in the earlier days became one of the most important features in the general scheme of decoration, as in the example from the garden hall at Raynham, which was built early in the seventeenth century by Inigo Jones. Another good example of Jones's woodwork is the staircase at Coleshill, one of the first complete Classic houses built in England, and the door to the main salon shows the correct type of work employed there.

Yet another example of his work is the doorway from the double cube room at Wilton. This magnificent room is looked upon as one of the best proportioned in existence, and is I think the first room in England to have been laid out as an entire scheme on such an elaborate scale.

One very important factor in woodwork which assisted so much to change its character about this time was the employment of new kinds of timber. Oak had been the almost universal material, varied occasionally by the use of chestnut, up to the seventeenth century—I mean, of course, in structural and decorative work. Rarer woods were doubtless used in furniture and smaller fittings, but after that time walnut and then mahogany came into favour, and softer woods with less pronounced grain were utilised for the carved work. It is obvious what an effect such a change in material must have on the methods and results of the wood-carver's work. The flat strap work and the carved ornament in low relief of Elizabeth's time gave way by degrees to the charming Classic designs and technical "tours de force"

of Grinling Gibbons and Cibber, whose treatment of floral swags and pendants was wonderful in its truth to nature and technical skill. But before proceeding to discuss the work of Wren's time we must not forget the connecting link between him and Inigo Jones, namely, John Webb, who as Jones's pupil worked with him on many of his buildings, and carried out others of his own in very similar style. Thorpe Hall, Peterborough, is his best work, and possesses a very fine wooden staircase with elaborate pierced panels in the balustrade and an effective treatment of the newel that is well worthy of note.

It seems extraordinary to us that at the same time that Jones and Webb were carrying out such typical Renaissance work, woodwork of a Jacobean and even an Elizabethan type was still being actively executed; but it must be remembered that this Classic work directly inspired from Italy was very restricted, its influence being confined to one man and his pupils; but with the advent of Wren and his school the knowledge of Classic art was very widely disseminated, and the older types of work which had grown up in the country and been handed down traditionally from father to son among the English builders ceased to continue.

In the hands of this school the treatment of woodwork was entirely changed, and as I pointed out before at Raynham, a general composition was required in lieu of isolated features connected by a certain amount of wooden wall covering without much incident.

During Wren's time we noticed the beginning of specialisation in the trades. Before Jones's time the architect, designer, builder and tradesman, to use the word in its original sense, were one and the same. He then lifted the architect to a separate position, and in Wren's time not only were the various trades strongly defined, but the carver, for instance, began to apply himself to work in some special material, such as Gibbons to woodwork, and Cibber to stone, and for the time being the resulting work was of the best, but afterwards slowly deteriorated. A fine example of Wren's designs and Gibbons's carving is St. Lawrence Jewry, and in the vestry door I think you can see clearly the beautiful forms of the mouldings as well as the carvings with which Wren's name is everlastingly to be associated. Another example of his work from St. Stephen's, Walbrook, though not quite so exquisitely refined as the last example, is one of great charm of manner, and from one of his most successful churches.

We cannot leave this subject without some reference to the most magnificent product of this phase of our nation's architecture, I mean St. Paul's Cathedral; and I cannot close my list of illustrations better than by referring to the woodwork of the choir stalls, which needs no remarks of mine to commend it to your notice and admiration.

Like all great periods and styles in art the zenith is no sooner reached than, unless a new and vigorous type assumes the command, decadence sets in, and this was the case with our architecture here; and having now threaded our way through the somewhat tortuous paths of architectural development in England up to the highest pitch of excellence to which we have ever reached, in Classic work at any rate, I think we can well leave our subject without inflicting upon ourselves the hardship of following our art through the subsequent decadent periods, which I fear have lasted down to our own time; and I can only terminate my paper by expressing the hope that it is left in our hands to do work which may worthily succeed the high standard to which our forefathers in the eighteenth century attained, not only in woodwork but in every other branch of architecture.

EDINBURGH ARCHITECTURAL ASSOCIATION.

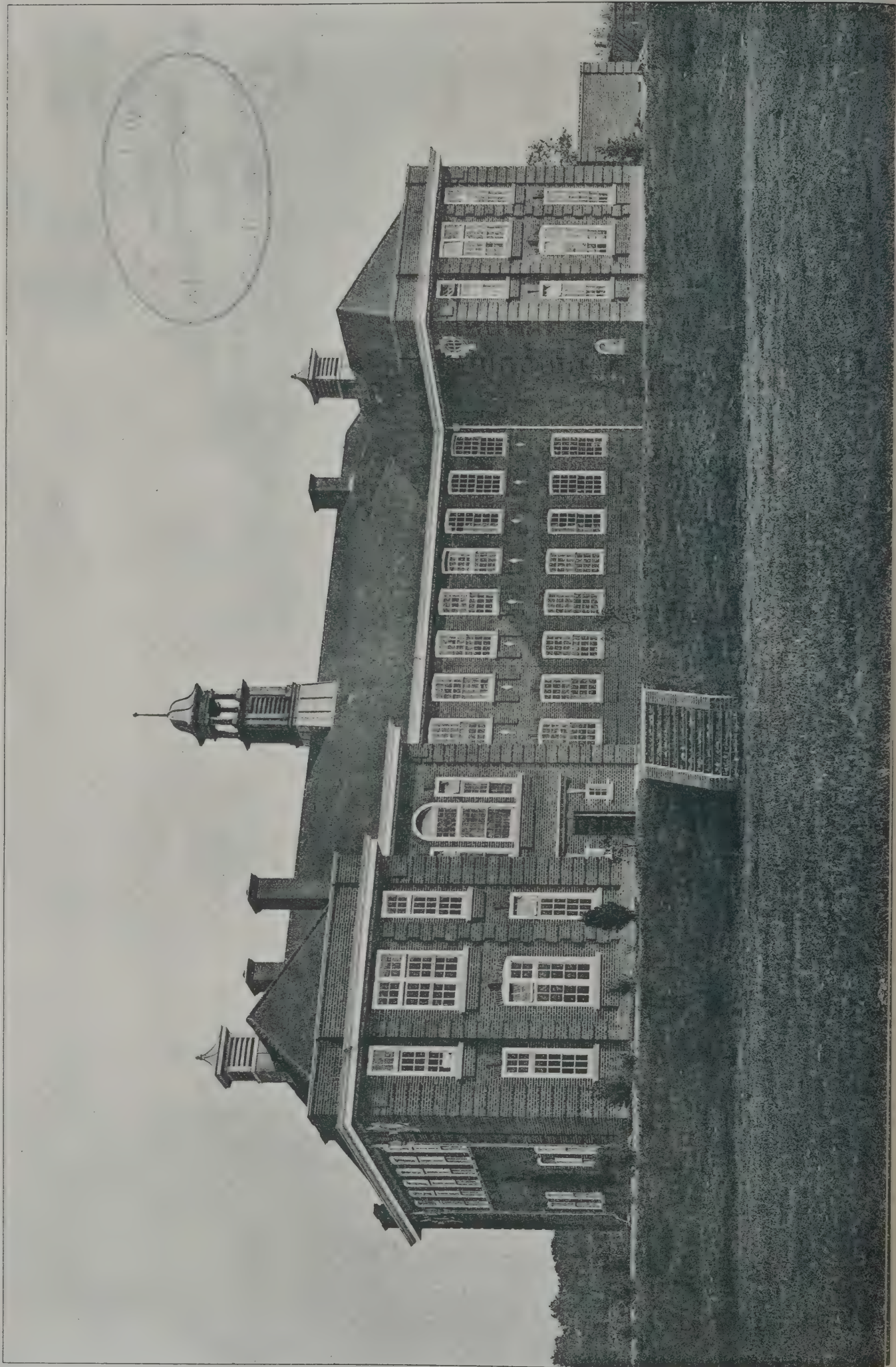
COPY of resolutions unanimously agreed to at a meeting of Council of the Edinburgh Architectural Association, held on Friday, February 3, and submitted to the Committee in charge of the Scottish Memorial to His Late Majesty King Edward.

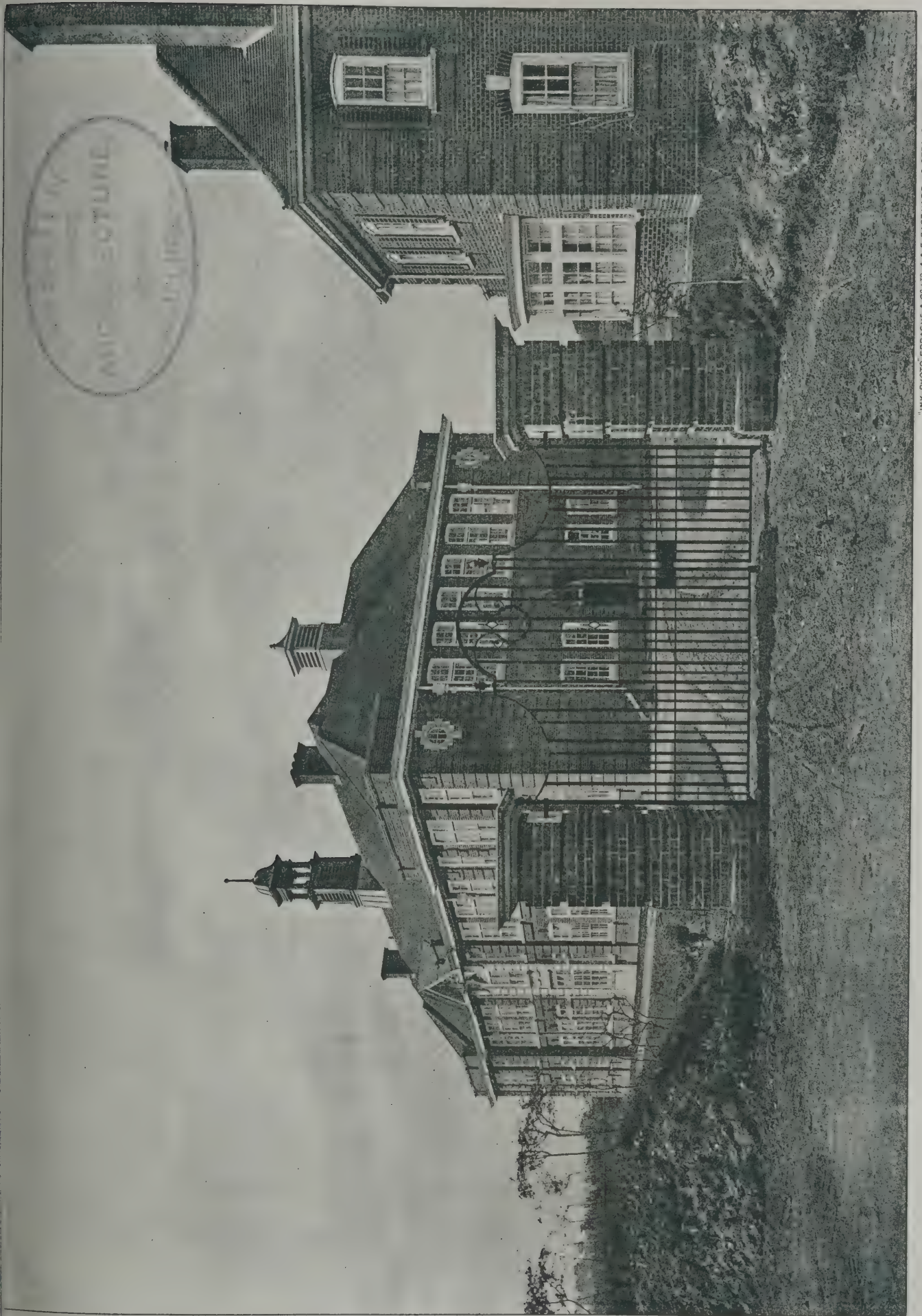
1. That the Council of the Edinburgh Architectural Association is gratified to learn that it is practically decided "that the Scottish National Memorial to His Late Majesty King Edward should be associated with the Palace of Holyrood and in or near the Palace grounds with appropriate public accesses." This resolution leaves room for diversity of treatment.

2. That the Council strongly deprecates the proposal that has been publicly made to erect a massive tower on the site of the ancient monastic gateway, inasmuch as it would obliterate the view of the Palace from the Canongate and conversely the view of the Canongate from the Palace grounds.

3. The Council also considered that it would be extremely unwise to remove the artistic and historical group of houses at the Abbey Strand, as has been publicly suggested.

4. That a select number of Scottish architects be asked to study the subject and submit designs for the general treatment of the project.





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COUNTY BOYS' SCHOOL, MAIDENHEAD.
Mr. A. JESSOP HARDWICK, F.R.I.B.A., Architect.





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The Architect.

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FORTHCOMING EVENTS.

Saturday, February 18.

Royal Institution : Mr. T. G. Jackson, R.A., on "Architecture—The Byzantine and Romanesque Period." (Second lecture.)

THE STUDY OF GREEK ARCHITECTURE.

PROFESSOR LETHABY in his lengthy and admirable historical lecture at the Architectural Association on "An Introduction to the Study of Greek Buildings," repeatedly disparaged the study of Greek architecture in a manner that was, we think, unfortunate, considering the character of his audience, largely composed of the youngest class of architectural students. At the opening of his lecture he said "I am in no manner to be construed as recommending Greek to you as the right thing to study." In his peroration he commenced, "While I do not recommend anyone to study Greek architecture specially, I can urge those who study it at all to do so in a bold, independent way."

It is to be feared that such words, from such an authority on architectural education, may be taken by the many students who desire to shirk as a justification for altogether ignoring Greek architecture as an exposition of art, and for only devoting as much attention to its history as the fear of examiners may compel. Thus they may follow exactly the wrong course. It is the history of Greek architecture that may be regarded as an unprofitable study except as a part of general culture and as facilitating the comprehension of the influences that made Greek architecture at its culmination what it was. It is no more necessary for a twentieth-century English architect to be able to distinguish between the prehistoric building work of Mycenæ, Tiryns and Crete, than it is for him to know the differences between palæolithic and neolithic pottery or flint implements.

Professor LETHABY's lecture was for the most part pre-eminently historical and archaeological, and we should like to be able to feel that it was the particular line of study of Greek work which he has himself followed that he deprecated for his hearers. Such study is, however, very far removed from that of the buildings produced by the artists of the Periclean age. These constitute some of the most admirable examples of architecture at its highest and best that the world has ever seen, and it surely cannot be otherwise than salutary for a student to devote his earnest attention to probing, and if possible understanding, wherein lies the secret of their excellence. Thus he will learn great lessons in architectural design which he can afterwards apply to any phase of architectural language in which he chooses to express his thoughts and his ideas, whether that language be Classic, Gothic, Renaissance or even New Art. This is quite a different thing to "designing pseudo-dipteral peristyles and Doric triglyphs," which Professor LETHABY seemed to imply was what he meant by the study of Greek.

Monday, February 20.

Royal Academy : Lectures on Architecture by Professor R. T. Blomfield, A.R.A. : (1) "The Du Cerceau."
 Architectural Association : Mr. W. G. Newton, B.A., on "That Brick is eminently suitable for large Town Buildings."
 Liverpool Architectural Society : Mr. E. Rathbone on "What is the use of Architect?" An answer.
 Victoria and Albert Museum : Mr. Banister Fletcher on "The English Home." (University of London lectures.)

Tuesday, February 21.

British Museum : Mr. Banister Fletcher on "Roman Palaces and Houses." (University of London lectures.)

Wednesday, February 22.

Carpenters' Company : Mr. Walter Cave on "Brickwork."
 Northern Architectural Association : Students' Meeting.
 Manchester Society of Architects : Paper by Mr. F. B. Dunkerley.

Thursday, February 23.

Royal Academy : Lectures on Architecture by Professor R. T. Blomfield, A.R.A. : (2) "French Architecture of the 16th Century."
 Carpenters' Company : Mr. Whitworth Wallis on "Pompeii, the City of the Dead."
 Leeds and Yorkshire Architectural Society : Mr. H. E. Henderson on "The Minor Domestic Architecture of Yorkshire."

We cannot conceive that it is necessary to design pseudo-dipteral peristyles and Doric triglyphs in order to understand and even to imbibe the Greek spirit, which the Professor suggested we might share by "perfecting stock-brick walls, chimneys and down-pipes," but which we fear will ever remain an unknown quality to those who ignore the study of Greek architecture at its best.

It is the fashion at the present day amongst a certain section of pedagogues to decry the study of Greek by schoolboys, but there is scarcely any subject in the whole of their curricula more effective than the study of Greek language and literature in correcting that vagueness of thought and looseness, nay sloppiness, of expression which are so characteristic of twentieth-century writing and speaking.

So in the education of an architect the great and inestimable qualities of proportion and refinement can be instilled, we are perfectly convinced, in no more ready way than by the study of the best Greek buildings.

Even Professor LETHABY was constrained to admit that "There is no doubt that the Greek builders delighted in setting out their buildings and their several parts in dimensions which had relations one to another." And yet he spoke of the time devoted by many painstaking students to the elucidation of these proportions as wasted, and indulged in a perfectly unjustifiable sneer at their labours. There are still many of us who have known the late Mr. FRANCIS CRANMER PENROSE, and regard as an insult to his memory the insinuation that those who have measured Greek buildings for us have not hesitated to falsify their dimensions to fit their theories.

Where would Professor LETHABY's knowledge of the curvature of lines by the Periclean Greeks have been if it were not for the microscopical accuracy of measurements by PENROSE and others. And are Mr. PENROSE's investigations and conclusions of the systems of proportion employed in the Parthenon to be dismissed as mere moonshine imaginings by one who is forced to recognise the application of curvature to lines which he revealed to us?

It is clear to us that Professor LETHABY has not in the slightest degree grasped the meaning of proportion in architecture, when he asserts that the eye "takes no heed of the accuracy of the relation of eight to one or the same with 2 inches added or taken away." This may be true of the Professor's eye, just as there are amongst us ears that cannot distinguish between a true note and a false one on the violin, but it is not true of the perceptive eye of the artist.

Referring again to the curvature of lines, Professor LETHABY said that "Such adjustments are most natural

in a highly refined school of architecture." There could scarcely be a more complete proof than his own words of the unsoundness of his advice to young architectural students not to study Greek architecture. A highly refined school of architecture is to be ignored by them. We should have thought that such a school should receive their most earnest and careful study with the full intention of imbibing, if possible, a little of that Greek spirit which has given the world some of the greatest masterpieces of architecture. We trust that the members of the Architectural Association Schools will be sufficiently bold and independent to turn a deaf ear to the Professor's unwholesome advice.

NOTES AND COMMENTS.

It is somewhat unfortunate, we think, that the Council of the Royal Institute have not felt themselves able to specify more precisely the manner in which the author of the design to which the Soane medallion was awarded had "failed to comply with the conditions of the competition." The failure was clearly not apparent on the drawings, because the prize was awarded, and consequently all sorts of rumours are afloat, some exaggerated and some baseless.

We cannot admire the way in which the Council evaded their own difficulty by deciding not to award the Soane medallion this year. The design "Civitas" being withdrawn, it was their duty to find the best design of the remainder submitted, and to carry out the promise made in the name of the Royal Institute that the Soane medallion "will be awarded for the best design." There can be no question that there were several designs submitted this year equal in quality if not superior to some that have won the medallion in past years, and it is extremely hard upon those students who have spent so much time and produced such excellent work that, through an unfortunate contretemps, they should have competed for a **virtually** non-existent prize. It may be said that as the original award gave equal recognition to two designs there was no best, but such an argument is opposed to all ideas of fair play. Because a number of brilliant young men all do good work therefore the prize shall not be awarded is an absolutely unthinkable proposition.

In the case of the Soane there was not the excuse that has been put forward with regard to the Grissell Prize, that none of the competitors were worthy to receive it, though even in this latter case we do not consider that the Council was justified in withholding the prize. When the promise has been made that a prize "will be awarded for the best design," that obligation ought to be discharged, even if no competitor comes up to the standard of past years.

It is unreasonable to expect that the standard of achievement will in various years be uniform, or even that it will reach any given level. It is impossible also for the judges to maintain any particular standard in their consideration of the designs submitted. The difference in character and difficulty of the subjects given, and the varying personality of those who decide the awards, render a continuously level standard unattainable.

We are very much disposed to believe that the withholding of a prize that the Royal Institute has asserted "will be given to the best design" is a legal breach of contract, and that every one of the competitors for the Grissell Prize would succeed in an action for damages for the value of his time and money spent on the preparation of his design. Certainly we are confident that the practice of withholding prizes which have been offered, although supported by precedent, is very unwise policy and very bad form.

The development of the London County Council Central School of Arts and Crafts certainly has not up to the present been commensurate with the capital

expenditure on building and equipment, and we are therefore not surprised that the Education Committee have recommended the Council to appoint a whole-time Principal at a salary of 1,000l. a year. If the School is to occupy its proper position it must have a head who will devote his whole energy to its work, and the right man will be difficult to find. He must have full sympathy with and appreciation of the work of every art and craft; must be an efficient organiser, a thorough educationist, a keen critic, and a good man of business. He must not be a visionary, a dreamer, or an expert in any one branch of art.

The Finance Committee of the Liverpool City Council has found a solution of the problem of the King Edward Memorial in a thoroughly English way—by compromise. What else could be expected with a number of eminent architects and Royal Academicians saying one thing and others equally eminent contradicting them? We doubt very much whether all those who have lent their names to the controversy have even seen the models or possibly even St. George's Hall, but for the Philistine there can be little reliance in the artistic judgment of experts when men of high reputation split into opposite camps. The Committee has decided to recommend the adoption of Mr. NORMAN SHAW's scheme for the steps, but with spaces at each end of the podium for statues, that of King EDWARD VII being placed at the end nearest to Lime Street. We have not seen the models although we know St. George's Hall and we therefore express no opinion.

In *The Connoisseur* for this month we have a particularly good number. The second part of Mrs. WILLOUGHBY HODGSON's description of Mr. W. H. LEVER's collection of Chinese porcelain deals with blue and white ware, of which many beautiful illustrations are given. Of architectural interest is an account of the charming old house known as St. Peter's Hospital, Bristol, with its wealth of seventeenth-century carved woodwork, both internally and externally. Eighteenth-century portraiture by RAEBURN and others bulks largely in the illustrations.

WOOD-CARVING.*

By LAURENCE A. TURNER.

(Official Report.)

WOOD-CARVING is generally affirmed to be the most popular of all the artistic crafts. That it should be so is natural, inasmuch as it can be used to adorn so many things that are in every-day use in our homes. It is a clean occupation, and can be made an amusing pastime or a strenuous employment, just as the whim of the person may fancy. How many people have taken it up as a whim, but soon laid it aside with a sigh! They have very soon found it is not as easy as it appears. I think it is about the worst of all the crafts for an amateur to choose. The number of technical difficulties to be mastered is much greater than in other kindred crafts. The difficulty of collecting a set of tools and getting them into condition fit for use, and keeping them in good order, is a matter requiring great experience and patience. The beginner at the very outset is confronted with the heavy handicap of having to work with tools that are in a condition that even an experienced carver could not work with, and yet he has to use them, without skill and without knowledge. Half the battle of wood-carving is learning to sharpen tools and get them in good order—that is to say that their shapes, sizes, temper, thickness and curve of the cutting edge require to be adapted to the use they are to be put to.

How to produce a good school of young wood-carvers is at the present moment occupying the attention of more than one of the influential societies around us. To my mind there is only one way, and that is the old one, of apprenticeship. Wood-carving is one of those industries in which apprenticeship has disappeared. I don't know a single carver who takes his place in the ordinary round of London workshops who has not served his apprenticeship.

* Part of a lecture delivered at Carpenters' Hall on February Third of the Series on "The Arts Connected with Building."

This Honourable Society, the Carpenters' Company, are doing the right thing to benefit the wood-carver. It was my privilege to go the other night and see the class held in their schools at Great Titchfield Street for the advancement of wood-carving. It is the best of its kind I have seen. We owe them a debt of gratitude for the work which they are doing there so well and thoroughly. No trouble, care, or expense is spared by them to do what they can to help the wood-carver to improve his position; and not the wood-carver only, but most of the other craftsmen connected with building.

Until the carver has been through the discipline of a workshop, where he will be taught the traditions connected with carving,

limited kit. What the apprentice most needs, and what he seldom gets during the years of his apprenticeship, is the opportunity to block in and rough out the carving from the beginning: he is generally employed in finishing what the older carver has begun. In the evening classes such as I have just referred to he should be given a block of wood and taught to see the planes that the work should be boasted to, to see the contour of the masses, that he may quickly rough out the work and remove the wood in a workmanlike way. He should be taught to draw, so that he may with as little labour as possible be able to convey his ideas on paper. Highly finished chalk drawings from the antique are not of the kind he wants to learn.



BENCH ENDS, EAST BUDLEIGH, SOUTH DEVON.

He will never become a master of the craft. He may no doubt be able to produce some excellent work, possibly of great originality, but he will not have that grasp of carving generally, that ready perception and comprehensive imagination that is required of the carver who has to work for many masters. It may be said that it is better that he should not be so constituted; perhaps so, but as things are now it is absolutely necessary that he should receive this wide training if he means to gain his livelihood by wood-carving.

To debar the beginner from learning all he can from those great masters who have come before us is as narrowing as it could be to give an apprentice half-a-dozen tools and tell him that he must do his work for the remainder of his life with that

The reason why carving is roughed in by one man and finished by another, which is the usual custom, is that apart from the fact that the first stage of the work requires greater skill and knowledge, the tools used for finishing require to be kept in a different condition from those employed for roughing in. They have to be sharper, and consequently have a thinner edge. If those used for roughing out were sharpened like the finisher's tools they would be constantly gapped from the strain that is put on the edge by the heavy use of the mallet.

The most important thing to remember in wood-carving is to make every cut tell. The great charm of a well carved piece of work is the spontaneous effect it should possess. The work should appear as though each cut was the result of a

single thrust, not laboured or niggled, but direct, decisive and firm. This quality should be particularly marked in soft wood such as pine. Carving that is laboured, and over-finished so that the mark of the tool is not detected, is very dull; one ought to be able to see how the work is carved, but if you cannot most of its interest is lost.

Carving is a thing to be done rather than talked about, to be seen rather than the lecturer to be heard.

The main difference between the principal tools is first of all that some are shouldered to prevent the steel from being driven into the handle, and are used for heavy work. The chief difference between carvers' tools and other wood workers' tools is that the carvers' tools are sharpened equally on both sides. Also that in shape they are bent to allow the tool to make deeper hollows than could be done if they were straight. Most of them are made from a square piece of steel which is widened out suddenly to form the shape for the cutting edge: these are called spades. It is very important in the bent gouges that the curve should be exactly right, so that leverage comes on the right place. The curve from the edge to the heel should be a continuous one. The fluter is an important tool inasmuch as a great deal of work is outlined with it. Instead of setting in the outline of the design by driving the tool into the wood at right angles to the ground, this tool cuts a groove round it, thereby avoiding the unseemly cuts in the ground that may be found when the work is finished. Even if there are not cuts, the wood will be bruised by the other method. The sharpening of these bent tools is a slow and laborious process, as there is very little room for movement of the oil-stone slip on the inside of a bent gouge. The number of tools a carver has to form a kit may be any quantity from about six or eight dozen to a gross or more.

Most of the painted medieval work was given a coat of gesso before being coloured, to soften the cuts. I think it is justifiable to use glass paper judiciously on carving that is to be painted. This is the exception to the rule that should always be remembered in wood-carving, that every cut of the tool should tell and be a help in producing an effect in drawing as well as contour.

In the strap work ornament there is great variety in the width of the bands. Modern imitation rarely possesses this feature.

For this type of Jacobean work it was outline rather than modelling that was aimed at, and very vigorous that outline was.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A MEETING of the Royal Institute was held on Monday last at Conduit Street, Mr. Leonard Stokes, president, in the chair.

The decease of Mr. Alexander Cullen (Fellow) was announced.

Mr. E. A. RICKARDS was then called upon to read his paper on

The Artistic Development of London.

After all that has been said during the last year under the inspiration of the movement which culminated in the Town Planning Conference, it is difficult, said Mr. Rickards, to find any original abstract thoughts on the subject. There-



EMBLEMS OF ST. JOHN EVANGELIST. FRENCH OAK CARVING, LATE 15TH CENTURY.

There is a very simple form of decoration sometimes used, the ground being sunk and the outline cut in with a parting tool or V tool, but it is a very effective method and tells well at a distance.

This sort of carving would be much more interesting to do than what is called chip carving. I recommend it to the Kindergarten teachers.

Some examples of the same method of work have been painted all over with a preparation of black wax, the face of the wood afterwards being cleaned off.

In showing a series of font-covers Mr. Turner said that in all this type of work the carving takes a secondary place; the architectural design is the important thing. But the carving although secondary requires to be treated in a masterly way. It must not be laboured; it must be kept broad and simple. Crockets require to be little more than shaped outlines, but the sum and total of all these small shapes is a most important factor to the success or failure of the whole. Now this is one of those things that cannot be talked about; it is only to be done and learnt by a close study of good examples.

Carving for such a position as in a roof must be kept exceedingly simple; it is little more than outline that is required.

fore he proposed to confine himself to a few disjointed observations which might come under the heading of artistic development as applied to the externals in the central and best known portion of the city.

If London is to affect the large manner of the Continental and American city, she has little as a basis to work upon; certainly no centre of interest such as the buildings and gardens of the Louvre and the avenue leading from them. When one thinks of the development of a city one thinks naturally of some such central motive—the occasion offered in the historic case of Wren and his scheme in connection with St. Paul's. Such chances have consistently been lost sight of or ignored from then onward, and in our own time the opportunity presented at South Kensington with the Albert Hall as a beginning stands out as an example.

With all its deficiencies this neighbourhood occurs in the mind as one of the spots on the map of London. Had any real symphonic treatment of the neighbourhood taken place around the Albert Hall, in which the theme given out by this building could have had its due development, we should have had some such central motive for this portion of the city on a scale that would have brought it into touch with other centres that now seem remote. Compare, for example, the



SCREENWORK, DUNSTER, SOMERSET.

apparently close relationship of portions of Paris with what seems undue separation between others in London.

There is abundant evidence that we have never cared for development in the literal sense of the word. The jealous way in which the very large amount of open space in London has been guarded is a large part of the proof. This is a superstition which will have to be mastered if we are ever to create any considerable spheres of influence and character in our new city, any effect of space through which a motive may be repeated and developed in all its possibilities of form and suggested harmonies. We hear enough of how iniquitous it is that private ownership should stand in the way of the small street improvement, but how much more so it is when a small corner of some Crown lands or public space stands in the way of the general good?

Then, again, we lay down restrictions in the material to be used in certain new streets. No other material than stone to be used for the elevation of business premises for example, while some of our largest public buildings are being erected with such a material as red brick largely introduced and cutting up the façades. This is surely reversing what might be the real order of things. In new avenues that have been laid out in which it has been possible to allow of a certain direction if not an absolute vista, gable fronts are permitted which break all continuity of design and any feeling of coherence which decided horizontality in the character of the buildings would have ensured.

As an example from which much might be developed and acted upon in the treatment of many of our avenues, take Pall Mall, perhaps the most beautiful street in London by reason not of its uniformity, but of its harmony of design and the subordinate interest of its individual buildings. Double the scale of operations and you have Oxford Street with its emporiums in place of clubs, capable of just as solid and artistic an expression of their purpose. There is some evidence already of this in the strongly marked horizontal lines of the several new blocks lately erected and the happy abstention from the angle entrance. The motive of the successions of lamps and braziers which line the areas to the clubs and make a beautiful vista, might be introduced in the avenues of mammoth stores, though the handsome standards of regular height, would in character correspond with the building opposite which they are placed. Lombard Street, with its signs and again strongly marked horizontal features, though of very different proportions, is another of many examples of motives that might be developed. In the case of shop-fronts and subordinate features, the interest is localised and the greater the variety in contained spaces the more artistic and interesting a street may become. The exotic element in a cosmopolitan centre such as the Rue de la Paix in Paris is an example of this, and the shop-fronts of Regent Street had this very fine precedent when their individuality

was first threatened. In London, with its narrow streets, it must be recognised that the commercial plane or the bazaar is on the street level and not a few storeys above. The eighteenth century in London recognised this and we in our own age of ugly advertisement have cut across this tradition and invented the display of the façade above.

Some simplification of the units of street design is essential if the formal ideas lately so much the mode are to be embodied and materialised amongst us.

Apart from the practical advantages of direct communication and other attributes of light and air, &c., it is difficult to see the artistic gain in such London developments as Kingsway and its approaches, if the so-called improvement is carried no further than it exists as it were on paper and is confined to one dimension.

The scale of London which has taken so many centuries to evolve will always be with us, and if we can possibly give an effect of order in the many improvements of our time we shall be developing in a much freer manner than by these Continental schemes in miniature. A feeling of order is the most we can hope to attain to, and this combined with interesting detail would eventually result in a beauty which would be London's own.

MR. PAUL WATERHOUSE then read a paper on—

The Artistic Development of London.—The Means to the End.

By "artistic development" he referred to architectural development. If London has to be developed there are duties which can only be done by architects. Almost everyone would be ready to prepare the necessary plans for the improvement and development of the Metropolis. Therefore he did not intend to advance any æsthetic project, but merely to inquire by what means any such projects as may be forthcoming are ever to be brought to fruition in fact.

Cities beautiful owe their beauty to their streets and their houses. The streets may be beautiful by accident and irregularity or by deliberate street design. The houses of these streets may be beautiful individually or collectively. Our London contains beauty of all these four kinds: two classes of streets and two of houses. But it is clear that some artistic sense should ever be watchfully controlling these four elements of beauty. Though the present age in England is exceptionally strong in the numbers and qualities of architects, yet enterprises of vast importance are sometimes undertaken in London without any architectural advice whatever; and even if first-rate architects are engaged, there is a conspicuous lack of general architectural control. Construction as ruled by the Building Acts is admirably censored and controlled by an excellent system of district surveyors. Sanitation is also rigorously and vigorously regulated by the surveyors of the various borough councils. But the art of



OLD CHEST, EAST DEREHAM, NORFOLK.

London building passes almost free of public control and stimulus. The problem is not whether more artistic control is required—for that is a certainty—not whether architectural talent is available, for that also is a certainty, nor what would Mr. A. or Mr. B. or Sir X. Y. Z., the leaders of our craft, make of the London problem if they were in charge of it, for that is a mere hypothesis. No; the problem is this: How are Messrs. A., B., and Sir X. Y. Z. to be brought within striking range of the work which so obviously lies waiting for them? There can be no possible doubt but that what is needed is the employment by London for London of the very highest architectural advice in those problems of collective architecture which are greater, not less, than the task of designing individual buildings for individual sites.

But no one man could do all the work that needs to be done and no committee of men can effect work which can be styled work of art. How then are we to get individual artistic genius applied to the whole of this great acreage of buildings? Mr. Waterhouse said his suggestion was that it should be made compulsory on each of the boroughs whose territory comprises the heart of London to appoint a borough architect. The functions of that architect would in no wise overlap either those of the district or borough surveyors. Both of these classes of men have their hands full, and do their work uncommonly well. The borough architect would have as his primary and simplest work the passing or rejection on purely æsthetic grounds of the designs of intended new buildings. His critical censorship would extend to the admissibility of altering and preserving valuable old buildings. With him again would lie the duty of advising his borough, probably in consultation with a central authority, on the formation of new streets or new frontages; to decide whether in certain places individualistic architecture should give place to the grouping of houses in larger composition, and he would be looked to as the guardian of art in those public works which boroughs so often carry out without any architectural advice whatever.

In cases where, as in the formation of squares or the approach to a bridge, collective architecture seems desirable he would very probably be himself responsible for the elevations, though having full liberty to initiate a competition for such work or to advise the engagement of another architect. The borough architect, who must essentially be a man of accepted and conspicuous standing, should be paid a fixed and inclusive yearly income. He would not be debarred from general practice, but should be prohibited from private engagements in his district. The appointment should not be permanent—say, in the first place for three years only, and then renewable at the option of the borough, for other successive periods of a like span. Next Mr. Waterhouse dealt with the grave question of the method of appointment. Without doubt, he said, the nominations should come in the first instance from the Council of the Royal Institute. Special

conditions would no doubt apply to the nomination of the original appointments, but if once the scheme were in full working order the most natural procedure would be for each borough, when its vacancy occurs, to make application to the Council of the R.I.B.A. for the nomination of not less than two men from whom the borough would then make their own selection. The initial nominations would in like manner be made by the Royal Institute.

The Act of Parliament enforcing the scheme would no doubt make it obligatory upon certain boroughs—*e.g.*, the City of Westminster, the Royal Borough of Kensington, and the Boroughs of Holborn, St. Marylebone, St. Pancras, Paddington, Lambeth, and Southwark—to appoint architects forthwith; the remaining boroughs should be given the option of making appointments, but most probably in the course of a very few years or perhaps months a friendly rivalry in the matter of architectural prestige would lead to the rapid adoption of the system throughout the metropolis.

There would have to be some architectural monarch controlling this commonwealth of artists in the interest of co-ordinate action. His electors should be the whole body of already appointed borough architects; they should have liberty to select him either from their own number or from outside, but if from outside they should, as in the case of the boroughs, seek a nomination of two candidates from the Royal Institute. The chief architect would of necessity be the adviser of the London County Council, and would, therefore, hold his engagement from them. The Council would accordingly object to delegating their own powers of appointment to any outside body; but, at any rate, the Board of Borough Architects should be allowed some voice in the selection.

The duties of this architect-in-chief would be other and wider than those of the present architect to the London County Council, being severed from all functions of Building Act control and of the design of Council buildings. The proposed architect-in-chief would be *imprimis* the adviser of the London County Council upon the whole handling of their larger schemes. All new streets that run from one borough to another would be in his charge; all bridges and cross-river communications would come under his control, and generally he would be the appointed adviser on the artistic problem of London as a whole. His relationship to the borough architects would be intimate and probably cordial. He would be officially the chairman of their monthly meeting, informally he would be their constant advisory colleague. There would be in the case of architects or owners objecting to the censorship of a particular design by a borough architect a right of appeal to the monthly board, and this would virtually mean that all doubtful cases would come before the architect-in-chief. Subject to a period of probation at the outset and of retirement at the close, this appointment should be both permanent and exclusive.



TYROLESE DOOR OF CABINET. LATE 15TH OR EARLY 16TH CENTURY.

The objector may still have something to say against my architect-in-chief. "Why," he will ask, "put any single man into a position of such awful supremacy?" My answer is that the position of awful supremacy exists whether we appreciate the fact or not. It exists and it is wiser to fill it with a man than to leave it occupied by a vacuum. The problems which would be the province of this architect-in-chief, if ever he be appointed, have undoubtedly got to be solved somehow. They are now waiting for solution. They may, of course, be solved by the haphazard decision of unarchitectural citizens sitting in elected oligarchy over London's destiny, but is that the right course? And, if it is not, surely the only reasonable alternative is the voice of an individual, the only voice that can really control an artistic issue. And is it not right that such an arbiter should be selected by the most critically artistic electorate that we can devise? His autocracy would be sufficiently tempered by the Board of architectural colleagues.

Mr. LEONARD STOKES, in calling on Lord Beauchamp to open the discussion, remarked that they had that evening the lion and the lamb among their visitors, and he would ask them to propose and second the vote of thanks.

Lord BEAUCHAMP (First Commissioner of Works) said he accepted with pleasure the President's description of himself as the "lamb," and he would leave it to the "lion"—in the person of the Chairman of the London County Council—to second a very hearty vote of thanks to the readers of the two papers. He would like to say a few words in praise of London as it was to-day. All would admit that there are exceedingly ugly buildings to be found up and down London. But at the same time there are exceedingly beautiful buildings, both old and modern. We were far too ready to depreciate and decry the circumstances under which we lived. We were now in a period of almost golden age. During the last fifty years England has produced a number of masterpieces both of literature and of art, and we can produce extraordinarily fine work. There was hardly a single form of art in which we could not show some first-class person from among ourselves. Consequently he felt impatient with people who decry British art. However, he was almost in despair at the high prices given for works by bye-gone masters. Praise was bestowed on people for being patrons of art who did nothing more than commission art agents to spend large sums of money on the purchase of old masters. Often it was merely a form of advertisement. A more enlightened public opinion would make them realise that they would be doing more for art if they did something for the artists of to-day. One could very seldom go into London without seeing some beautiful sights. If only people would walk about with their eyes a little more open they would appreciate these things more. The difficulty in talking about such a subject was that

it soon became a matter of individual taste and opinion. You may differ from a man on any question of immense importance without mishap, whereas in discussing taste such a quarrel may result as to prevent your speaking to him for years. They would all agree with Mr. Waterhouse's three general propositions:—(1) That the preservation of London's past and the guidance of London's future are an artistic trust of the greatest importance, and that so important is that trust that those on whom it is imposed should in their own interests take reasonable professional advice as to its fulfilment. (2) That, as it is not merely an archaeological trust but an artistic one, the necessary guidance of the action of the trustees should be sought not from committees or societies but from individuals. Art is produced by individual artists, not by corporations, and (3) that the proper advisers are architects. He was glad, however, that in a later passage Mr. Waterhouse admitted that committees did some good, for they sometimes do stumble into doing the right thing. In matters of that kind architects were certainly the proper advisers. He had to confess that it was not so very long ago since he himself was to be found among the critics of the Office of Works; and he only hoped that he could still appreciate criticism when offered. As First Commissioner he would always have an open mind on any criticism.

Mr. WHITAKER THOMPSON, in seconding the vote of thanks, said that as chairman of the London County Council he was particularly interested by the reference in Mr. Waterhouse's paper to "the haphazard decision of unarchitectural citizens sitting in elected oligarchy over London's destinies." In his own case he never had been an architect and he never professed to know anything about it. He certainly knew what he liked in the streets; and if the Royal Institute would appoint him the chief architect of the L.C.C., he was prepared to make London what it ought to be—according to his own ideas—if the Council would let him do as he pleased. The members of the County Council had to look on matters from a point of view rather different to other people. They would like to insist on the best forms of architecture in the new streets, the widening of old streets, and the retention of all that was beautiful in the latter. They got help from some architects, but not from all; for some of the designs submitted failed to come up even to his unarchitectural ideals and were not consonant with the buildings on one side or the other. He did not want to see patchwork streets, but rather something a little more harmonious than is now being put forward as the latest in individual street architecture. With regard to the most original suggestion of having twenty-eight borough architects with a central architect as chairman, he could picture from his own experience what a high old time the latter would have when presiding over the accumulated



CARVED OAK PANEL. ENGLISH 15TH CENTURY WORK.

scholarship of all those others. The idea was, however, well worth consideration. Even though they might not attain to it all at once it would be a magnificent thing if the authorities could get competent advice in the different parts of London either from men receiving a reasonable honorarium or from those who would do it for the honour of the thing. In looking at buildings nothing appealed to him personally so much as simplicity. He thought that tradesmen should as far as possible be restricted to advertising themselves on one floor, leaving the others to something else.

Sir LAURENCE GOMME said he would venture to suggest that inasmuch as it was entirely wrong for those who were not architects to discuss purely architectural problems, so it was not quite fair for a layman to begin the work of constitution-building. The constitution suggested by Mr. Waterhouse left out the most important fact that London required an ideal of its own, and that it could not have twenty-eight ideals. It was just as important for Stepney and Shepherd's Bush to be in close touch with the architectural beauties of London as it was for them to have a beauty of their own. He would ask for a larger ideal than that put forward in the paper, which should be compared with the ideal of the Roman city of London. That city was built on the ideal of the city of Rome herself. At the present time they wanted to carry out the same ideal in all the great cities. The first duty of the architect of to-day was to supply the principles for artistic development; and he should not attempt to carry out those principles until they were settled. Street corners afforded a great opportunity in the architecture of the city of London. He suggested that the architects of London should first of all apply themselves to the architecture of street corners, leaving for a later time the filling-in between the corners. It was remarkable that their old and beautiful streets, like those of Chester and Salisbury, dated before the advent of the architect. For instance, Sir Peter Paul Pindar built up that beautiful house-front of his without calling in an architect. The explanation seemed to be that every citizen then had the ideal of beautifying the city in which he lived. London was a city of lost opportunities; but if architects would come forward with advice the position might be recovered. The English people were generally most illogical, only carrying out a project half-way. He believed and hoped that the papers would prove steps to some great improvement in London's future development.

Professor BERESFORD PITE strongly protested against the assertion that London was a city of lost opportunities. There were, he contended, few cities that can compare with what London possesses to-day, either in ancient or modern buildings. One would have to go a long way to excel such a group of mediæval sacred buildings as Westminster Abbey, St. Bartholomew's, Smithfield, Southwark Cathedral, and the Temple. Or think of Lambeth and Fulham Palaces, and the Tower of London! Thus in ecclesiastical or palatial or castle types of building London possessed the finest in the country. Where in Europe would one group Renaissance buildings like Greenwich Hospital, Somerset House, and St. Paul's? London was not a city of lost opportunities—it was a city of gained opportunities—and there was none other like it. Turner had said that St. Paul's made London. There was no need either to lament over lost ideals; for in the Palace of Westminster they possessed a building which would bear comparison with anything in the modern world. The profession are now face to face with a stiff-necked generation in the matter of art. They had, however, to be thankful for some great public improvements. In that connection they could not let the opportunity pass of expressing their satisfaction that Sir Aston Webb would be entrusted with the work of completing his scheme in the West End of London

where a great recognition had been witnessed of architectural principles. The chairman of the London County Council had referred to municipal architects strengthening local borough councils with voluntary architectural knowledge. They could only hope that the authorities would so conduct their business that architects will be able to afford to give advice.

Sir ASTON WEBB said that Mr. Waterhouse had made reference to proposals of his made some years ago when occupying the presidential chair, and with particular reference to the Commission of Taste as existing in America. Lord Plymouth, the then First Commissioner of Works, who was present at the meeting, had, at the request of the R.I.B.A. Council, brought the matter before the attention of the Government. And there the matter remained. He could only hope that something on the lines of Mr. Waterhouse's scheme would be carried out. As in official life the expert was never given an entirely free hand, it was probable that the chairman of the suggested borough architects would not have things entirely his own way. Possibly he would not be an architect at all, but a man of taste and refinement. It seemed to him that the papers read that evening were the kind that the Institute should have, and they were likely to influence public opinion. Public opinion appeared to be interested in architecture and in the importance of towns. The two papers showed that the Institute was doing its duty to the town in which they lived.

Mr. LEONARD STOKES, having briefly closed the discussion with a few remarks, put the vote of thanks, which was carried by acclamation. Mr. RICKARDS and Mr. WATERHOUSE then replied, and the meeting terminated.

ILLUSTRATIONS.

EXAMPLES OF WOOD-CARVING.

THE whole of our plates this week are illustrations of Mr. Laurence Turner's lecture on "Wood Carving" at Carpenters' Hall, on February 8. The two panels showing St. Mark and St. Luke are from the set of four at the Victoria and Albert Museum showing the four Evangelists. They are fifteenth-century Tyrolese work and are carved in lime, which is the best of woods to use for fine carving. The panels are essentially wood and delightfully conventional.

The chimney-piece in the Board-room of the New River Company shows craftsmanship of quite another kind. It may be objected that the lion and the unicorn are too well fed; but the rest of the carving is about the finest technically that Grinling Gibbons ever did, and as a piece of realism could not well be surpassed. Further proof of his virility is seen in the plate showing a bracket in the library of St. Paul's.

The mahogany frame carved with foliated scrolls and a mask is early thirteenth-century English work. It is a vigorous piece of design and workmanship. The thicknesses of the edges are here of the utmost importance. It should be observed how the surface becomes the thickness, and vice versa.

The two doors of carved oak with brass fittings are from a Dutch ecclesiastical screen of about 1700, and are remarkable for the broad, simple treatment of the fret work. It was probably carved with the intention of its being gilded or painted, which would account for the broad flat treatment.

With the exception of those from St. Paul's Cathedral and the Metropolitan Water Board's offices, the originals of the above examples are in the Victoria and Albert Museum.

THE ARCHITECTURAL ASSOCIATION.

AN ordinary general meeting of the Association was held at 18 Tufton Street, S.W., on the 6th inst., Mr. Arthur Keen, President, in the chair. The following were elected as members of the Association:—Messrs. P. Butt, Oakwood, near Chesham; L. A. Gundry-White, Norwich; Alberto Meza, Richmond; and R. W. Stoddart, Abbey Wood, Kent. The re-instatement of Mr. J. W. Abraham as a member was announced.

The joint meeting of the Architectural Association with the Junior Institution of Engineers will take place on Friday, February 17, at 7.30 p.m., at the Royal United Service Institution, Whitehall. A paper will be read by Mr. S. Bylander, entitled "Construction of the Building for the Royal Automobile Club."

Professor W. R. LETHABY then read a paper entitled "An Introduction to the Study of Greek Art," in which he said:—

It would be difficult to analyse particular buildings without a large number of illustrative diagrams, and I propose here to attempt rather the general survey of the origins and characteristics of Greek architecture. Further, I want to explain that I am going to be frankly historical, and I am in no manner to be construed as recommending Greek to you as the right thing to study. I believe all these historical studies may be dangerous to those who would actively follow modern architecture, which I conceive of as masterly structure with adequate workmanship. However, the world is a big place with lots of people in it, and historical study is a peculiar aptitude of the modern mind. We have to keep every faculty alive, and we desire not only living architecture, but the most perfect understanding of history. If the question be raised, May not archaeology and architecture be incompatibles? Will not one necessarily kill the other? I reply that I don't think that they need if we have a proper understanding that they are entirely separate things. Great history and the devising of flying machines flourish at the same time without difficulty. I don't see why the faculty for history is necessarily more at war with *resting* machines than with motors and steamships. The question is nearly parallel with that concerning drawing, which has very little to do with architecture, but while it is accidentally associated with it so closely as it is to-day it is necessary that it should be highly disciplined and as perfect as we can make it.

About the year 1800 the remarkable structure now known as a beehive tomb with a richly ornamented doorway, a large part of which is now in the British Museum, was first made known by British explorers. It was on Greek soil at Mycenæ, but seemed strangely unrelated to all that was known of Greek art, and for long the gulf between the two seemed unbridgeable, but constant exploration has more and more filled up the void. Works of a similar kind have been thoroughly examined in the neighbourhood, at Tiryns and Orchomenos, and recent excavations have revealed the Mycenaean type of art at Sparta and many another Greek site, including even Athens itself. It has been found at Troy in the East, and westward in Italy. The culture of which this art was a product was evidently spread over a wide area. Nowhere, however, have such full and continuous evidences been found as in the island of Crete, which is now believed to have been the very centre of the civilisation which produced it. That it might be so is perfectly clear from the traditions embodied in Greek literature. According to Homer, "Crete of the hundred cities" sent eighty ships to Troy, and he mentions by name Knossos, Phaistos, Tiryns, and several others.

In 1865 Captain Spratt, who had surveyed the island, seems to have foreseen the results which would follow on excavation. "At Knossos," he says, "the capital of the island, commerce, education, art, and law seem to have obtained a high state of advancement under its wise lawgiver and king, from the respect with which they are referred to by the earlier authors. It was from Dædalos and his successors in Crete that Greece improved her art and taste. Crete was apparently a school of art and learning in later times, as it had been in that of Minos an early cradle for the arts, forming the stepping-stone between Egypt and Greece, as the natural result of its situation, its naval power, and its commerce."

It was only in 1900 that the systematic exploration of Crete was undertaken, but such great results were almost at once obtained, especially by Dr. Evans, at the ancient palace or palaces of Knossos, that it seemed desirable to find some name which should cover art of this type whenever found. We have got so used to calling it Mycenaean that it is difficult to bring in another name, especially while there is much controversy as to the races who employed it. From the well-known name of Minos, the real or mythical ruler of a Cretan empire, Minoan is now the favourite term, but for many reasons Ægean seems

best. It is held that the most beautiful pottery and metal-work found on the mainland were probably brought from Crete, and that the finer details of architecture, such as gateways at Mycenæ and the carved slabs of Orchomenos and Tiryns, are wrought in a style derived from Crete. Mycenæ and the others were the seats of comparatively petty powers, whereas the island was the centre of an empire, resting on oversea trade, and geographically the outpost of the Northern peoples nearest to the greatest art power in the ancient world—Egypt. We have at the simplest to think of three early cultures which came to represent Africa, Asia, and Europe—that is, Egypt, Babylonia, and the Greek lands, all influencing one another. This Ægean art is the first great European style, and from 2000 to 1500 B.C. it was in many respects the most advanced art in the world.

Only last week a discovery was announced which, if substantiated, will make this art of still greater historic importance. At Phaistos in 1908 a disc inscribed with pictographs was found in a stratum which could be dated before 1500 B.C. A professor in an American University claims to have read this, and to have found that it is written in an early form of Ionic Greek. It records a sacrifice, and the names Zeus and Athene are mentioned on it. He argues, here following Dr. Evans, that it is not of Cretan, but of Ionian origin. He also, without giving details, speaks of having read some of the inscriptions which had their origin in Crete itself, and finds that they are Athenian Greek. If all this is true the story of Greek origins will have to be largely rewritten, as it will show that a Greek-speaking people were seated in Ionia and the islands millenniums before our era, and further that the Ægean art is not merely an underlying stratum which influenced the development of Greek art, but is a highly-developed first phase of Greek art itself. At about 1300 B.C. there were great upheavals and invasions which almost entirely subverted this Ægean civilisation, so much so that except for remains of pottery there is hardly a link which connects the latest Ægean with what is commonly called archaic Greek art.

Doric origins in Ægean art have been treated fully by Dörpfeld. The typical plan of a cella with a portico having columns *in antis* is taken over from what I am calling the parent style. The *antæ* themselves, that is the pilaster terminations of the wing walls, are derived from upright timbers which terminated the mud brick walls. The plinth course, which in mature Greek work is about twice the depth of the walling courses, is a memory of the masonry foundation beneath the brick walls. Puchstein has shown that a remarkable type of Doric capital which is found at Pæstum, which has leaf carving around a throat member, closely resembles the capitals at Mycenæ, and that as Pæstum was founded by the Achæans, there is probably a direct relation between the two. At Tiryns an enriched band was found which has a curious resemblance to the Doric triglyph frieze. It is made up of slabs alternating with bond pieces which rebate over the slabs. Perrot and Dr. Evans have claimed that we here have the origin of the Doric "triglyph motive"; certainly it gives the constructive motive of the Doric frieze.

Ionic origins have not, I believe, been fully worked out, but I have no doubt that they derive also from the earlier stratum.

Over the door of Tomb II. at Mycenæ there was a cornice, the projecting part of which was carved into the likeness of the ends of round timbers. The same thing persisted in Lycia until the fifth century, and there is an interesting length of this type of cornice in the British Museum. It became the dentil course, that is, the principal member, of the proper Ionic cornice, which represents the ends of projecting square timbers instead of the more primitive round ones.

At this same tomb the half columns by the jambs of the door have vertical flutings with sharp edges; such flutings are common alike to Doric and Ionic columns, but more than one engraved seal of the Ægean type show columns with diagonal flutings. Now columns spirally fluted are characteristic also of late Ionic architecture, and it is possible that here again there was some continuity and not a mere accidental re-invention, for an early Poros stone fragment having spiral flutes has been found in Athens, which may well be a link between the primitive and mature architectures. Evidence for reeded pillars has also been found in Crete.

The horizontal band divided into three fasciæ which was adopted on the beams of the typical Ionic entablature is found as a decorative band at Knossos. The door-jambs similarly recessed, like the Ionic architrave, are found at the entry to the "Treasury of Atreus." Another fashion of door-jamb had a flat margin set at intervals with a series of rosettes, like the north door of the Erechtheum. The use of the rosette generally was characteristic of both ages. The most repre-

sentative feature of Ægean ornament is the spiral winding about an eye or a central flower, in a series of perfect volutes. It is now regarded as proved by Burchardt, Puchstein, and Meurer that the Ionic capital derives ultimately from a class of ornamental Egyptian capitals which were themselves based on the forms of lily and papyrus flowers, and Dr. Evans, ten years ago, showed that there were indications of this type of column on the Ægean vases.* It seems to me a high probability that the Ionic capital with the double volute, that is, the Greek lily capital, was actually realised in stone by Ægean artists.

If it be asked whether there is any evidence for continuity other than such likeness, the answer, I think, must be yes. In the Homeric poems this parent art is described with great fidelity. To the Greeks of the early historic period it was evidently a very real ideal. And again, Homer's ideals are in much the ideals of mature Greek art. Stone work was to be polished, and much bronze, gold, and ivory were to be used. Shining, glistening, well-jointed are the favourite epithets. Many of the early monuments remained. Thus the great beehive tomb of Orchomenos was perfect in the time of Pausanias, who speaks of it as the most wonderful building in Greece. In remote districts Ægean types long persisted.

All architectural planning is developed from the construction of primitive dwelling huts. Such structures branched off into the tomb and again into the temple—the tomb was the dwelling of the dead, the temple was the dwelling of a god. The dwelling house became complex in adding cell to cell, but the Greek temple remained a glorified hut, a simple cell. Temples hardly appeared outside Egypt before about 1000 B.C.

Probably the most primitive class of structure is the round hut, but the oblong is almost as simple. Advanced rectangular planning is found in Egypt from the earliest times known. In the Ægean lands the primitive hut is represented by the fine beehive tombs, but there are in Crete and elsewhere rectangular vaulted structures which seem to be as early. We have already seen that the normal temple plan may be traced back to the walls of Ægean palaces.

The circular plan, which attained its final power in that mighty crown, the Pantheon, very probably had a continuous history, although in the background. It seems impossible that when once the perfect species was reached in the beehive tombs of Orchomenos and Mycenæ that it should become extinct. In the shrines over the sacred vestal fires the tradition of the hut with the hearth in the midst was continued. An early Tholos has recently been excavated at Delphi. It was about 22 ft. in diameter and was surrounded by a ring of thirteen Doric columns only about 8 ft. high. It seems to have been built early in the sixth century. The Skias which was erected about the same time at Sparta by Theodoros of Samos must, I suppose, have had the same form. Of the beautiful early fourth-century Tholos at Epidaurus large remains have been discovered, and it and the circular building founded by Philip of Macedon at Olympia are now well known; still another handsome round structure has been excavated at Samothrace of the third century.*

Even the basilican form of plan may have a much remoter origin than has been supposed. Thus, Dr. Evans has found at Knossos a hall of the royal villa which is described as "a pillared hall about 37 ft. long by 15 ft. wide. At one end there is a narrow raised dais separated from the rest of the hall by stone balustrades with an opening between them in which three steps give access to the dais. At the central point immediately in front of the steps a square niche is set back in the wall, and in this niche are the remains of a gypsum throne." Dr. Evans suggests that this pillared hall with a raised tribunal containing an exedra holding a throne and bounded by cancelli is the prototype of the King Archon's house at Athens, and therefore of the Christian basilica. Be this as it may, some parallel or intermediate developments have recently been found. At Samothrace has been discovered a marble temple of the third century B.C. which is said "to anticipate in a singular manner, with its transept, its raised choir, and rounded apse the ground plan of the Christian basilica." A temple dating back to the sixth century has been found at Thebes of which "only a part of an apse remained, recalling the one at Samothrace." And lately some foundations have been uncovered at Sparta of a very early age which are said to have "rude apses," whatever that may mean.

Leaving the question of origins, that is, the continuity of Greek building customs from a very remote antiquity, and the implication that nearly all was tradition, and next to

nothing original design, Professor Lethaby proceeded to examine some of the building customs in detail.

After treating of walls and masonry, plaster and painting, mouldings, casings, stairs, windows and doors, pillars, cornices and caryatides, acroteria, roofs, &c., he proceeded:—In the great period of the fifth century the aim after a perfect type led to standardising arrangements and forms and endeavouring to perfect them along a very straight line. But before the fifth century there are very wide variations in even the simple Doric type. But in the architecture of Ionia variation of detail was aimed at in the same building. In the sixth century temple of Diana at Ephesus all the base profiles are separately designed, the shafts have different numbers of flutes, some even being narrow and wide alternately, and the Ionic capitals are varied like those in a Gothic church.

There is no doubt that the Greek builders delighted in setting out their buildings and their several parts in dimensions which had relations one to another. The idea could only apply to simple buildings like a temple; it could hardly be made to work with complex ones like a modern hotel or town hall. At the bottom it comes very much to a liking for setting out with big dimensions rather than with small ones. As the building was to be perfect every part was related, in theory, to every other part, and a unity was supposed to result because accident was excluded. The real proportions of a structure were, of course, determined by tradition, purpose, cost, situation, and materials; the rest was a slight modification superimposed afterwards, a getting rid of the half-inches, as it were.

A lot of time has been spent in trying to elucidate Greek proportions, for the most part time wasted. If I might I would like to recommend you to put away any hope of solving the question. The idea of looking for such proportions has been a most disturbing factor in the study of Greek buildings, and we hardly have accurate dimensions of any one in feet and inches, because the student was set on evolving some scheme of measures in the modulus of the diameter. If it didn't fit he added on a foot or two and said it must be so. Simplicity, clearness, accuracy, repetition, the eye can estimate, but it takes no heed of the accuracy of the relation of eight to one or the same with 2 in. added or taken away. It is quite an assumption that eight to one is good for a column; it depends on many things, the addition or subtraction of 2 in. might improve it.

It is quite different with the modifications by curvature and other adjustments; here we have something tangible if subtle. These modifications may be used to bring about unity. If the eight columns of a portico incline towards the axis and there is some adjustment in the spacing, you do not have one factor repeated eight times, but together they make up one whole thing—a portico.

Curvature of lines again furnishes an intermediate between the straight and the rounded, between cornices, columns, and sculptures. It takes off the hardness, as we should say. It will correct any look of sagging in horizontal lines, and it varies the lighting on surfaces. Such adjustments are most natural in a highly refined school of architecture and need no explanation.

While I do not recommend anyone to study Greek architecture specially, I can urge those who study it at all to do so in a bold, independent way. This mysterious Greek architecture was but one customary way of doing buildings, after all; and recent researches have shown that in origin the forms are barbaric and accidental—accidental, that is, in the sense that with other conditions they would have been different. There is little æsthetic mystery about the mud walls and wooden props which became a cella and peristyle, or in the overhanging eaves which became a cornice. The wonderful thing is the Greek spirit, and if we would share that we should concern ourselves with perfecting stock-brick walls, chimneys, and downpipes rather than in designing pseudo-dipteral peristyles and Doric triglyphs—that is, as builders: as scholars, let us know all that may be known.

To any of you who may desire to know about Greek buildings, I would suggest that you should work out some one point thoroughly, know all that may be known of a chosen building, and, as far as possible, get close to them and deal with them directly. Much may be learnt in this way in the museums of London, Paris, Munich, and Berlin (I have not seen the last), but I think we shall never gain any real mastery in such knowledge without taking our part in exploration and digging.

Mr. A. T. BOLTON, in proposing the vote of thanks, said they knew that Professor Lethaby had been studying the subject of his paper for some time and had published two or three excellent booklets on it. The history of architecture had been practically rewritten in that paper, and text-books

* On the primitive round hut, see Burrow's "Crete."

were now ten years behind. The Propylæa at Athens was very little dealt with by writers because it was a difficult building. On the stones there was a substance of about the thickness of a piece of paper. It was a revelation to him to learn, after inquiry, that these Grecian buildings were polished by slave labour. There used to be at the Crystal Palace a very valuable model of the Parthenon constructed to show all the curvatures existing in the structure itself. The model has an impressive character not seen in many buildings imitating it, but which will be realised ten times over in viewing the actual temple. The Parthenon is remarkable for the fact that though so small it is so impressive. There is some subtlety about it lacking to many large buildings elsewhere. No time would be wasted by the student which he spent in studying Greek buildings.

Mr. A. E. HENDERSON and Mr. THEODORE FYFE supported the vote of thanks.

Mr. GERALD HORSLEY remarked that Professor Lethaby had gathered up many threads of architectural history and made them into one beautiful woven piece. The paper had also cleared up several points about which they had been doubtful. With regard to what had been said in favour of covering stone with plaster and gesso, this appeared a beautiful way of finishing a building, but was it quite suitable to a northern climate with its hail, snow and rain? A plastered surface suffers from the weather and has occasionally to be stripped and replastered. Moreover, a number of pure white buildings would not look so well in this country as in the south. The Greek architecture was essentially a common-sense architecture. All English architects worthy of the name are inclined to treat their buildings from the natural standpoint.

Mr. WALTER MILLARD thought that the most useful part of Professor Lethaby's paper was not what he had said about Grecian architecture, but the stimulus it contained for students to learn for themselves. All the teaching and instruction in the world was of very little value compared with that desire to learn for oneself. Such a paper did a student far more good and helped him far more than one which plied him with knowledge in a condensed form gathered by someone else.

Mr. ARTHUR KEEN, the president, in closing the discussion, agreed that the great value of the paper was the way in which Professor Lethaby had shown them how to get to the essential root of things. Professor Lethaby had that capacity developed in a most extraordinary way owing to the fact that he was accustomed to follow one line, and follow it right through.

A vote of thanks having been passed with acclamation, Professor LETHABY dealt with some of the points raised in the short discussion. The meeting then terminated.

THE ILLUMINATING ENGINEERING SOCIETY.

THE LIGHTING OF LIBRARIES.

(Continued from Page 88.)

WITH regard to the reading tables. The tops of these are usually level, but many are provided with a slight slope. It is often found that the gloss of a page makes it impossible

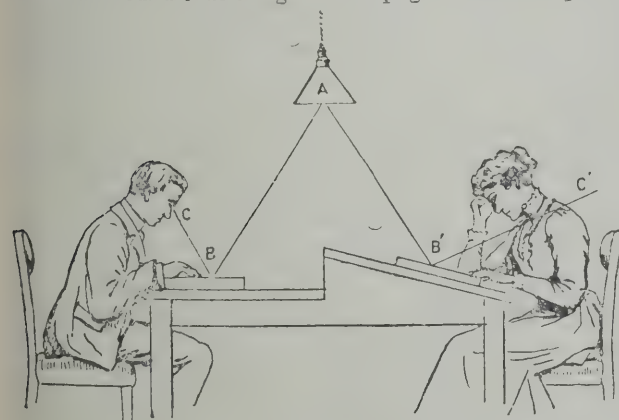


FIG. 5.

to read it unless the book is carefully tilted, and when there are the reflections of two or more lights it often requires considerable manipulation to avoid it. In fig. 5 A is a lamp, AB and A'B' the angles of incidence, BC and B'C' those of reflection. On the left side is shown a flat table where the reflection enters the reader's eyes. On

the reverse side is shown a sloping table-top, in which the reflected ray from the corresponding spot is harmless. This does not mean that sloping tables are better than flat ones, because an altered position of the lamp may just reverse the result; but it does mean that the reader should be spared the possibility of such an annoyance, and this can be done not only by each reader having an apportioned space, but that in that space there should be a lifting portion on a rack by which a book can be adjusted to any angle.

Whatever may be the need for free access to our great literature, there exists an equal or greater need for the very best facilities for the study of it, more particularly in view of the increasing degeneration of the eyesight of the modern student, but there is little hope of universal reform until the law steps in to make it compulsory.

THE PRESIDENT said he would now ask the Honorary Secretary to make a short statement concerning library lighting and the recent investigations that he had made.

Mr. L. GASTER, Honorary Secretary, hoped that the result of the discussion would be that the architect would at last appreciate that the illuminating engineer could be of some assistance to him. In the United States, when the Illuminating Engineering Society was started a few years ago, the first president was appointed, in addition to an architect, to act in connection with the lighting of the Carnegie Library. After careful consideration, the architect and the engineer, acting together, came to the conclusion that all naked lights should be avoided if glare was to be absent. In order to avoid glare they used the holophane globe in connection with the central lighting; but, in addition, they installed table standards with shades at a height which not only protected the eye of the reader, but were so constructed that the light was distributed sideways as well as downwards, thus giving a large table area well illuminated. The question had been asked as to what was the proper amount of illumination for reading-tables. In America, for the Carnegie Library, they came to the conclusion that 5 foot-candles was the proper amount. He also mentioned that the holophane globes used in the Carnegie Library had been covered on the top with an ordinary green shade, as it was found that too much light was being wasted in the upward direction. They also put in fittings which threw light right on to the bookcases and away from the eye of the reader. Mr. Gaster then referred to the lighting of the Patent Office Library in London. Much had been said about this, but it was impossible in public buildings to make alterations in a hurry. At the Patent Office it had been discovered that to have rows of chandeliers lighting up the gangways and leave the reading-tables in comparative darkness was of little use. Consequently, they put standards on the tables, but they had been placed in a haphazard manner, and the height also was unsatisfactory. Now it had been necessary to put cardboard round the bottoms of the shades in order to keep the light away from the eye of the reader, although, as a matter of fact, these cardboard additions seemed to be always wobbling about and were never in the right position. In the same way, the central lighting had been expected to light the numerous alcoves, but it had now been necessary to put in additional lamps here, and naked lamps were used. By the kindness of the Patent Office Librarian tests had been made, and whereas, originally, there were only about 1.6 foot-candles on the tables, the amount of illumination under the table standards was now from 10 to 12 foot-candles, and by reducing the number of chandeliers there was a considerable saving in current, amounting to from 200 to 300 watts per hour. At present there was a good general illumination all round with considerable local lighting on the tables. All this was a step in the right direction; but he would make the one comment that the lamps on the Patent Office tables were too far apart, although the Librarian held the view that this was a good arrangement, owing to the large space usually required by readers to place alongside them books which were being used merely for reference purposes. Another example of library lighting was at the Institution of Electrical Engineers' new building on Victoria Embankment. One would expect that such an institution as this would have the very best arrangement, but here again was the old story of the gangway lighting, because the architect wanted to have it symmetrical. In many parts of the room there was only 1 foot-candle on the tables, and that was not good enough. He would not condemn this room too strongly, because he believed it was still being experimented with, and he felt sure that they would instal table lamps. In connection with this question, the Assistant Honorary Secretary, Mr. Dow, had been round to many of the public libraries in London,

and had compiled some figures from actual measurements. It was at any rate some satisfaction to know that such measurements could be taken, and it pointed to the fact that with co-operation scientific illumination could be brought about.

Mr. J. S. Dow, in the first place, recorded his thanks to the various librarians who had afforded him facilities and assistance in making the various measurements referred to by Mr. Gaster. In giving a few of the results, he did so with the desire to show how a few things might, perhaps, be improved; and if he criticised occasionally, it was merely with the idea of being helpful, and not hypercritical. What struck him most had been the great diversity of conditions in the different libraries. They could not refer to library lighting as one subject, by any means. For instance, the Royal Colonial Institute Library was more like a club room; the library at the British Museum, where students read, was, again, different; a reference reading-room in a public library was different to the reading room, and that, again, was different from the lending room. In each case they had to consider what the room was meant for and to illuminate it accordingly. His impression, as a whole, was that he rarely met a case in which the intensity of illumination on the books was seriously too low. In some cases it was not as high as it might have been; but, on the whole, the results were fairly satisfactory, except for the defect of leaving exposed lamps, which affected the eye of the reader. This was certainly a defect in a great many cases, but it could easily be overcome by quite a small change in the nature of the shade used. Another point was that in most cases there was local lighting, plus some form of general illumination; but the exact arrangement seemed to depend upon the nature of the room and the brightness which was to be allowed on the surroundings. Professor Weber had laid it down that when the ratio of the brightness on the book to the surroundings was more than 100 to 1, then there was an effect which was trying to the eye. He did not come across any case in which that existed. On the other hand, in a reference room the surface brightness of the walls was nearly always more subdued, and librarians seemed to instinctively realise that bright and cheerful surroundings were necessary in a reading-room; whilst in the students' place a more subdued illumination was appropriate, so that the reader was naturally more inclined to concentrate his attention on the book in front of him. Therefore, in order to study that, he took measurements, not only of the actual illumination on the table; but the vertical illumination on the bookshelves, and also the surface brightness of the surroundings. He had collected an immense amount of material, but there was no time to deal with it that evening. He, therefore, only proposed to give one or two of the chief results as affecting special points that struck him in connection with the investigation. At the Islington North Library there was general lighting, with fairly light surroundings. There were also opal shades with metal filament lamps, which were naked. The illumination on some of the tables was about 2 foot-candles. This was not bad, but it was not so high as it might be. In his opinion it would be better if the lamps were frosted. In this connection it was curious that so few frosted lamps were used in public libraries, the idea being, apparently, to save every inch of light possible. But he believed they would be able to see better if frosted lamps were used, in spite of the lower light, as it would make the glare less. In connection with the class of shade used at Islington, he did not think this gave a scientific illumination. It was necessary to select a form of shade—and he believed it could be done—which had a polar curve, so that it would throw much more light sideways than downwards. In fact, one could easily scheme out a form of polar curve which would be ideal in this respect. At the Fulham reading-room the lamps were badly arranged in respect of the newspaper reading-racks. At one part of the sheet there was an illumination of 4 foot-candles and at another only 0.4 foot-candle. For these racks some method of inverted lighting would be best. The same thing applied to shelf lighting to some extent. In this particular room at Fulham he found that there was a brighter light on the ceiling than there was on parts of the newspaper, viz. about 5 foot-candles. A rather interesting feature of the lending library at Fulham was the illuminated signs over the bookshelves. But the light in this room was not scientifically distributed, although it was an advantage to have the lamps screened to some extent, as was done. The students' reference library at this library was one of the most pleasant rooms he had come across. The table standards were fitted with green shades, which kept the light from the eyes, and there was absolutely no glare. It was not a very efficient shade, but

the illumination of 3 to 4 foot-candles was ample, whilst the surface brightness was about 0.3 foot-candle. There was thus that subdued lighting which was required in a room of this character. At the Islington Central Library the arrangement of lights was rather curious, being in a series of lines of seven lamps each. It seemed to be something mystical, from the architect's point of view. They were rows of naked lamps with little metal shades at the top, which, whilst it might be æsthetic, was quite hopeless from the illuminating engineering standpoint. It meant that a large amount of light was thrown against the shade and wasted, or thrown upwards; it never reached the tables. With the other lamps in this library there had been an attempt to shade the globes, but the ends of the lamps projected below the shades and affected the eye of the reader. The lighting of the Surveyors' Institution was one of the worst examples. There were lights in the gallery, but on the floor there were only clusters. In the various bays, in which there were bookshelves and tables, the illumination on the tables was only half a foot-candle, whilst on the bookshelves themselves it varied from 0.4 to 0.15 foot-candle. As a matter of fact, the whole impression was that these bays were much darker than they really are. Another curious feature was that the watts per square foot are quite high—as high as in plenty of much more successfully lighted buildings. Further, the lamps were in shades, but the ends of the lamps were visible to the eye. The characteristic of the table lighting in the Patent Office was the distance between the standards, the reason for which had been mentioned by Mr. Gaster. The result was that the light was very far from uniform, being very high under the lamp but tailing off at the sides. At the Fulham reference room there was a satisfactory protection of the lights by green shades, and the lights were also closer together on the tables. At the Royal Colonial Institute they had holophane chandeliers with no special lighting for the shelves at all, but, owing to the surface brightness, this lighting was quite good. In conclusion, Mr. Dow emphasised the point that the figures obtained for all the libraries which he had investigated varied very greatly. He had taken the watts per square foot and the illumination in foot-candles on the reading-tables, on the shelves, and on the attendants' counters in some cases. He had also investigated the surface brightness of the surroundings in foot-candles, and striking inconsistencies were shown, even in the same library. One of the most satisfactory was the British Museum Library, because of the freedom from glare. There was an immense dome with five arc lamps hung very high up with specially frosted globes. There were also 300 shaded table-lamps, and in spite of Mr. Darch's criticism the illumination of these tables struck him as very favourable. It was from 3 to 4 foot-candles in every case in which he got a reading. The lighting of the shelves also commended itself to him, as the light was hidden from the eye, but at the same time there was need for a reflector which threw down an absolutely uniform light. This would give the same illumination for a fraction of the power, as the light would then be distributed in a scientific way.

Mr. L. C. WHARTON (British Museum) said that in the place where he generally had to work he had to contend with his own shadow; but this was not a feature of the lighting of the British Museum, because in the reading-room it was possible to read at any one of the tables quite comfortably. It was even possible to read by the aid of the arc lamps alone in places where there were no standard lamps. Beyond this he knew nothing about the system of lighting the British Museum.

Mr. H. V. HOPWOOD (Patent Office) wished to make it clear that the lighting of the Patent Office Library was in a transition stage, and that experiments were still going on. In his opinion this was not a problem of lighting libraries in general, but of giving the reader in any particular library exactly what he wants, under varying circumstances, which latter might be due to differences in the reader, in the architect, or in the building. With existing buildings they had to deal with what they had, and the lighting must be suited to existing circumstances. He did not wish the Patent Office Library to be compared with any ordinary library. There was, perhaps, a different type of reader there—not the man who came to read a book from cover to cover, but the man who was searching and comparing, and they always had to give him plenty of room; not necessarily for the book he was reading, but for other books which he wished to consult; and this explained to a large extent the wide space between the standards on the tables. He thought the varying amount of light on the Patent Office tables was advantageous; for a man studying engineering drawings, for instance, had the

advantage of bringing them right under the lamp and of having a less illumination when he wished to read ordinary matter. An adjustment of from 0.17 to 4 foot-candles, he thought, was a very useful condition of affairs. As regards the rest of the library and the lighting of the book stacks, he preferred to say nothing. He admitted that the lighting at present was not satisfactory. He believed that it could be altered, and not extravagantly. As a matter of fact, by the new arrangement that had already been adopted a saving in current had been made.

(To be continued.)

BRITISH SCULPTURE OF TO-DAY.

AT Carpenters' Hall, London Wall, on Thursday last, Mr. M. H. Spielmann, F.S.A., gave a lecture, copiously illustrated with lantern slides, on "British Sculpture of To-day." He said the object of the lecture was not to deal philosophically with the theory of sculpture as that would be impossible in the brief time at his disposal, but his concern was with the school of sculpture which had arisen in Great Britain within the memory of some present, and he intended to illustrate as great a number of works as possible and offer such criticisms and suggestions as might properly be expressed in respect of the efforts of men who were for the most part happily still amongst them. He wished to place before them certain facts in relation to an art as a rule overlooked by the general public, for whom sculpture usually meant a plaster nymph, a bronze gentleman, or a marble angel. Since 1875 a great change had come over British sculpture, so revolutionary that it had given a new direction to the aims of our artists, and had raised the British school to a level unhoped for, or at least entirely unexpected forty years ago. He did not pretend that the British School of Sculpture equalled in technical expression or the elasticity of imagination the schools of France or of Belgium. The French school, prominent for the most part rather than really great, with one or two notable exceptions, had been built up upon the national traditions of many generations of their sculptors during many centuries. On the other hand, British sculptors, awakening to a feeling and appreciation of plastic beauty, found themselves practically without a past of their own to inspire them. They found no national tradition, and competent as they were to found a national school, yet they had to begin at the beginning. The awakening was largely brought about by Leighton and Alfred Gilbert and in a lesser degree by Onslow Forbes, and since then the whole conception of sculpture in England had been modified. It was difficult to realise how bad their sculpture was seventy or eighty years ago. It was then said they had four classes or grades of merit in the monuments in Great Britain—"bad," "worse," "worst," and "worst of all." Men began to look around them and seeing what was done asked themselves, "Is this sculpture; is it art?" They chuckled at the equestrian statue of George III. close to Waterloo House, and declared that they had never seen so drunken a horse and so sober a rider. The fact was that King George commissioned Wyatt to execute a group of St. George and the Dragon, but before it was finished the King died and by order of the Government of the day St. George was changed into the king; the spear was exchanged for a cocked hat, and breeches and Hessian boots covered the muscular limbs of the brawny saint. The dragon was removed from the horse, which was left startled as well it might be. Thackeray said he once took a French friend to the Wellington statue who exclaimed, "Ah, Waterloo is avenged." Ignorance of sculpture was confined to no class and it was to be found inherently in the highest official classes where appreciation was most earnestly to be desired. He was glad to say this was not the case with the present Chief of the Office of Works. There was an idea abroad amongst sculptors and the public that a Minister of Fine Arts such as existed in France would ensure support to artists and good art to the public; but the only way for a nation to obtain good art, said Ruskin, was to enjoy it. A safe way to ensure bad sculpture would be to appoint a Fine Arts Minister from amongst their distinguished politicians. They would remember probably an instance of official taste when not long ago the Premier in the House of Lords and a Cabinet Minister in the Commons poured jesting scorn on one of the finest modern works of architecture in England. He referred to Mr. Norman Shaw's New Scotland Yard. No wonder that Canova hearing their enlightened classes repeat commonplace opinion about sculpture exclaimed, "You Englishmen see with your ears." Knowledge was not everything, for there was taste, and taste must be trained lest it be corrupted by the shallow and

meretricious in art which was more dangerous than mere incompetence. Bad taste was worse than no taste at all; for "no taste" might be educated, but bad taste was vicious altogether. How vicious and bad it could be might be seen in the extraordinary popularity of the clever trash from Italy which attracted crowds around it in the popular exhibitions and in the open sale places of their great towns. It might be clever in its way, but it aimed primarily at astonishing the neighbours. It was work which was tricky, dodgy, simply imitative, distinguished by false and over false sentiment, and lacking all appreciation of elementary propriety. The sculptor who did such work and did it successfully was like the man who toiled and got his strength and agility by turning big summersaults for the delight of the crowd. Chief amongst the characteristics of their modern school was an effort towards such realism and picturesqueness of treatment as would not detract from the dignity of the conception. They had not yet arrived at the unsculpturesque attempts to render atmosphere and momentary impressions in marble and bronze. They remembered that sculpture must primarily represent ideas and not things, for as Michel Angelo has said, "The nearer painting is to sculpture the better it is; the nearer sculpture is to painting the worse it is." The present aim was to give life without undue realism—to suggest the reality throughout in beauty and grace. The nude must always remain the symbol of the ideal personality and not merely of human beings deprived of their drapery. The aim of art was beauty. Clothes were the outcome of necessity and what had art to do with necessity? It was not only beauty of form which attracted the sculptor but beauty of movement for its own sake, as developed in the play of the muscles and joints and in the art of expression. All this was concealed by drapery. It was not surprising that the art of sculpture was little understood in this country or indeed by the general public anywhere, and especially in this city of London, for the eye was ever more affected by colour than by form. Again, while painting was frankly illusive sculpture appeared to be imitative, although it was nothing of the kind. Its beginnings were more easy than any other art but its endings more difficult. The form was without colour and atmosphere and tone; without landscape and other accessories suitable for pictorial treatment. Whilst the painter could take almost anything for his subject the sculptor was restricted, for in sculpture the model had to be idealised or the result was commonplace. This being so the introduction of colour necessarily condemned itself, for the more a statue looked like a real man the less it looked like sculpture and the more like a waxwork. On the other hand, a single colour was no colour sculpturally treated, so that whether they set up in their public places a white man or a brown or a green man they must recognise in him a certain nobleness of aspect and qualities above others which justified perpetuation in sculpture of the memory of any man. Until Alfred Stevens scarcely anyone in this country thought of instilling real life and blood into clay and marble. Stevens realised not only life itself, but dignity, nobility of form, and movement previously unknown in British work. A follower of Michel Angelo and the Italian Renaissance, he was entirely a personality and no copyist. He was in the right sense unconscious of his own greatness, and had not the accident of an open competition brought his genius before the world he might have gone on teaching and designing furniture and fire grates with the occasional relief of painting portraits or occasional decoration. One of the secrets of his success was his knowledge of construction, and his feeling for architecture helped him to treat architecture with fine decorative effect. His memorial of the Great Exhibition, which was never carried beyond the sketch, showed his practical ability and the intellectual force of his imagination. His great sketch for the Wellington Memorial had similar qualities and he would not enter into the bitter debate on what he held to be the scandalous treatment of this supreme national treasure. Thomas Woolner had done work almost as fine as Greek. Sir E. Boehms's best known work in London—the Wellington Memorial—was cold, although doubtless correct enough; but it seemed more like an enormous chimney ornament. Foley, who at first was all for pure style, threw his pretensions to the wind with his statue of General Outram, now in India. Meanwhile Armstead was attracting attention with his work at the Colonial Office, and his statue of Lieut. Waghorn at Woolwich. The crowning merit of Armstead's work was its unornamental character and its sense of style without any chance effect. George Lawson had a genuine sense of style and only just escaped general recognition as a fine sculptor. His "Motherless" was correct and admirable, Scottish in sentiment and full of pathos, yet he thought too pictorial for

sculpture. Brock entered Foley's studio when he came to London in 1866, but he was courageous enough to modify his style when already formed and when his career was already assured, and so developing, he left his master far behind. His "At a Moment of Peril" was followed with "The Genius of Poetry," but he reached a higher point with "Eve." In his "Gainsborough" he seemed to have realised in the marble the very technique of the painter, whilst in the statue of Dr. Philpot at Worcester the treatment of the drapery was most striking. His statue of Professor Sir Richard Owen showed much the same handling. From that they turned to a work more admirable still in feeling—the bust of the late Queen Victoria, one of the noblest, most dignified and characteristic works of this class exhibited in England. This work heralded what was recognised as Brock's masterpiece—the tomb of Lord Leighton in St. Paul's Cathedral, which was a monument one felt the late President would have rejoiced in, for all was joy, beauty, tranquillity and peace. Proceeding to show portraits of the plaster model for the Queen Victoria Memorial in front of Buckingham Palace, soon to be unveiled, Mr. Spielmann said it was intended that Mr. Brock should have spent twelve months in travelling to see the monuments in Europe so that he might be helped if possible. Unwilling, however, to go without doing anything, he made the sketches for King Edward and they were accepted at once. The monument was 75 ft. high. This great work was intended ultimately to be only one incident in the great scheme of the Processional Road if ever it came to a final completion. To give some idea of the magnitude of the work he might say the whole of the monument which stood upon a platform was 2,500 tons in weight. He thought that Mr. Brock was wise in deciding to follow traditional lines in this great work, for it was not the occasion, as some held it to be, to run risks by striking out into a new track. He had followed the work which was not only personal to the sculptor, but thoroughly modern in treatment, and it could not be doubted but that the complete work would be the crowning triumph of Mr. Brock's career. Sir C. Lawes-Wittewronge was always strong and healthy in his work and his figures were full of movement and life. Mr. Hamo Thornycroft with "Teucer" reached the high-water mark of his early career—it was instinct with life and noble in form. On the other hand, his "Sower" obviously inspired by Millet was a different study in which modern dress had to be treated, but what the sculptor lost in the human form he gained in action and movement. In the national memorial to Mr. Gladstone in the Strand they had the *magnum opus* of Mr. Thornycroft in size if not wholly in quality. The figure itself faithfully and impressively reflected the character of the man in his robes as Chancellor of the Exchequer. A prominent example of the realism in Thornycroft's work was the Gordon statue in Trafalgar Square, most suggestive of the dignity and benevolence of the hero—it was one of the finest statues in London. For a contrast they had the statue of Dean Colet, the founder of St. Paul's School. Mr. Havard Thomas was one of the most serious minded and artistic of their sculptors, as was seen in the public monuments to Samuel Morley and Gladstone. E. Onslow Ford, who was lost to them before he passed middle age, made his first success with the figure of Henry Irving as Hamlet, which was a well conceived piece of realism, romantic and verging on the theatrical, which was exactly what an actor's portrait should be. This was now in the Corporation Art Gallery. His bust of Huxley was more strikingly sculptural, but his Gordon at Chatham was more open to criticism on the question of multitudinousness of ornamental details. Therein he thought it overstepped the boundaries of what was allowable in sculpture, for it gave the sense of a large ornament. His Shelley monument was finer in its parts than in its entirety. His work always charmed if not of the highest class. He would have gone further if he had been more restrained in the matter of ornament, and yet his work reflected the character of a man whom they all admired. In 1877 Leighton burst upon the world with his "Athlete Struggling with a Python," and if this had been dug up in other soil he wondered what would have been said of it. It was the greatest achievement in its own way that had ever been produced in the world, and yet it was felt to be lacking in that kind of humanity which every great masterpiece must exhibit. Leighton, however, said that he had gone for pure beauty and expression of form to the exclusion of all sentiment. But then came the "Sluggard," which, although simpler in detail, was a higher accomplishment than the "Athlete." It was just as Greek as the other in its devotion to form, but instead of representing the action of occurrence it had the higher conception and some of the mystery which

was distinctive of the finest art in ancient times and which in modern sculpture generally was so notably deficient. Yet the sensation made by Leighton's sculpture and mastery seemed to have had no direct follower amongst the younger men. The lecturer proceeded to speak at considerable length on the work of Mr. Alfred Gilbert, whose position in the art world, he said, had long been proclaimed by his brother sculptors and the public. It had put him on a pedestal so high that his artistic reputation was almost beyond harming, even by himself. Rarely had a man burst on a world with a message of hope translated into more brilliant achievement. His great qualities were seen in his effigy of John Howard at Bedford, full of character, with a spiritual as well as a physical side. It foreshadowed the Shaftesbury Avenue fountain; but greater than these was the magnificent colossal statue of Queen Victoria at Winchester with which his name would ever be associated. The work was a veritable masterpiece, even although it had so much of goldsmithery in it. It afforded an object lesson as to how much a masterpiece of sculpture was cared for in this country. The monument was designed for an interior, but the Municipality found there was no room for it. Eventually it was set up in a public garden, but the indifference of the authorities to this treasure of art had developed in a worse form in the populace, who robbed it of many of its beautiful features. No wonder that Gilbert was broken-hearted and declared his unwillingness to consider any scheme of restoration. The lecturer also touched on the Duke of Clarence Memorial at Windsor, and said Gilbert was not to be considered as a mere sculptor but as a sculptor and romanticist in one. When they remembered that England produced him as well as Flaxman, Stevens, and Watts they might well ask if form was indeed foreign to the temperament of this country and if sculpture was really an exotic in the land. In "Pandora" and "Hounds in Leash" they saw the work of Harry Bates, who in his short life did splendid work for the British school of sculpture, and the photographic productions of his beautiful reliefs went into homes which never before had known what sculpture meant. In Sir George Frampton they had one of the most versatile artists of the day. Highly accomplished, he was at home in every branch of art and covered the whole field. His latest work was a statue of Queen Mary intended for India. Frampton had great powers as a designer and hardly less as a modeller, although he did not like his technique to intrude upon the eye. Mr. H. Pegram, who attracted attention when little more than a youth, always showed an appreciation of sentiment and his work was full of movement and life. In dealing with Mr. Alfred Drury's work they had always to remember that one test of the sculptor was his rendering of young children and young forms. Yet the public was always more taken with the easier forms of old age—it was always easier to make marble screech than sing. Quite recently Mr. Drury had carried out a series of colossal groups which was one of the architectural features of the new War Office, and although seventy feet from the ground and utterly thrown away at such a height, those who could see them recognised them as fine. Of his purely decorative architectural work they had the Vauxhall Bridge panels and the work executed at the house at the corner of St. James's Street, Piccadilly, built by Mr. Belcher. Mr. Pomeroy was somewhat bewildering, for he could work in every style. His Robert Burns at Paisley was one of the most refined and unique effigies of the poet. His statues, like that of Dean Hook, were strong and fine presentments of life and they stood well. There was fine poetry in much of Mr. A. Toft's work. Professor H. Lanteri, of the Royal College of Art, had produced much admirable work, and as a teacher he had no superior. Mr. Goscombe John, while quite a student, established a reputation for the refinement and feeling in his work which had been sustained by his austere figure of St. John the Baptist and the Duke of Devonshire's monument at Eastbourne. Mr. Bertram Mackennal's work for the Local Government Board offices in Parliament Street was the best modern work of its kind in England. There was little doubt that in the future he would take his place very near the head, if not quite the head, of British sculpture amongst his contemporaries. His work was marked with an exquisite appreciation of the value of form and the general effect as a whole. They could expect better work from Mr. Fehr than they had yet had. His "Fallen Angel" showed great strength and great weakness. Most visitors to London knew one of the earliest of Mr. Colton's works—the Mermaid Fountain in Hyde Park, ordered by a Chief Commissioner of Works during a lucid interval. More admirable was his "Crown of Love." When Mr. David McGill exhibited his "Hero and Leander" it was thought he was a disciple of Harry Bates, but his

"Bather" was different. Dr. McGillivray was by far the most able sculptor in Scotland and had had much opportunity in Edinburgh. Mr. Derwent Wood harked back more or less on tradition, but he was a man who might challenge the ultimate supremacy of Mr. Mackennal in the future. His work was marked with strong character and serious thought. Mr. Alfred Hodge's work involved the whole theory of relief in relation to architecture. It was remarkable in style and character, and to some extent was overforced. His relief of "Commerce" was very low in relief in reality, the sharpness and boldness of the modelling and the almost exaggerated under-cut giving the effect. Mr. Richard Garr was producing work of real power, and Mr. Reubens Shepherd's work was sincere. In conclusion, Mr. Spielmann referred to the work of Geo. F. Watts, who, as a sculptor, gained their respect and enthusiasm. His half-dozen works, which included the recumbent effigy of Bishop Lonsdale at Lichfield, the equestrian statue at Eaton Hall, and the colossal statue of "Vital Energy" placed near Cecil Rhodes's tomb in South Africa, were masterpieces. He asked if the work of this grand old man did not mark for them a true standard; did it not point out the way to those of their younger sculptors who were too easily led away by the fashion of the moment?

MANCHESTER SOCIETY OF ARCHITECTS.

ON Wednesday, the 8th inst., Mr. F. W. Jackson read a paper entitled "The Village." He first reviewed modern conditions and tendencies in art, and compared them with the conditions under which the great works of the past were produced, and then passed on to the study of the buildings of a village on the north-east coast of Yorkshire, the village of Hinderwell.

It was of no antiquity, its church ordinary, if not ugly, but with a little search the rise and fall of its craftsmen can be seen.

At one time there was something of the picturesque, but that element has almost gone. The old cottages show signs of a life that could appreciate beauty; these qualities are not to be found in the newer ones. Then one could find among the tombs in the churchyard many with merit in their design and lettering, but who would visit the modern cemetery in search of beauty, although the modern mason is more expert? This leads one to consider what is happening to the dwelling houses of our people. We found in our village half-timber and plaster villas from the city suburbs that seem to fear the dashing waves driven by our north-east gales. They know they have not come to stay and are for the summer only. He showed a sea-captain's house. The stone of the district would not do. He must have red Accrington bricks, coloured glass in the entrance porch, big clumsy windows and cast iron railings. Opposite was an old house, such as could be found in any village. How unfavourably the up-to-date one compared to it. Mr. Jackson showed other examples of this contrast. He was no believer in the cry that we were a decadent people. We have become possessed of materials and facilities that the world has not known before in all the arts. The problem for students was how to adapt these modern conditions. It was no good to ignore them: we cannot in our village get the blacksmith, or the joiner, or the mason of the days of yore. As a painter he deplored the colour of many of the new materials now in use in these smoky districts, and he thought the thing to strive for in our towns was bigness of massing and a fine skyline.

UNIVERSITY OF LONDON LECTURES ON ARCHITECTURE.

(Continued from last week.)

AGAINST the wall of the immense reservoir, seats for the spectators of the Stadium were built, rising tier above tier. The principal block of the *Thermae* was placed near the main entrance, at the north-east extremity of the grounds. To this block there were only four entrances on the north-east side which was exposed to the cold winds, but the south-western front had many openings. The whole block was laid out on axial lines, the *Tepidarium* being the central point from which a magnificent vista right through the building could be obtained. This splendid hall, 170 feet long by 82 feet wide, was divided into three bays and covered with three cross vaults, the soffits of which were richly treated with stucco in relief, coloured and gilded. The vaults were supported by immense granite and porphyry columns 38 feet high and 5 feet 4 inches in diameter, surmounted by a "returned" entablature, which however only occurs over the columns and is not carried round the rest of the hall. The walls were 14 feet thick, faced with marble; semi-

circular recesses with smaller columns in front were used for warm baths. Light was admitted by clerestory windows, obtained by the intersection of the cross vaults. The St. George's Hall at Liverpool is the same size, but is divided into five instead of three bays and covered with one large barrel vault instead of three cross vaults.

North of the *Tepidarium* was the *Frigidarium*, an immense cold swimming bath, marble lined. It is believed to have been open to the air above the water. In order to admit light a wonderful panelled ceiling with gilt bronze girders is said to have covered the remaining portion.

South of the *Tepidarium* was an ante room which led to the *Calidarium*, a large circular hall 116 feet in diameter, but as to which, and the possibilities of covering the same with a dome owing to the thinness of the projecting walls, there seems to be some doubt; it is thought that the façade presented a high semi-domed apse, in which were several recesses containing the hot baths. The apse was heated by means of a hypocaust floor and the walls lined with hot air pipes behind the thin marble facing.

The baths in the recesses were heated in a like manner with a hypocaust furnace under each, and hot air flue-tiles running up the wall. The smoke from the furnaces was carried right up to the top of the building. There are some interesting examples of the flue-tiles and bathers' implements to be seen at the British Museum, and at Chedworth, near Cheltenham, there is a private bath with its hypocaust and flue-tiles.

The floors were laid with coloured marble mosaic, the designs representing athletes and various other subjects; richly coloured glass mosaic was used for wall decoration and apses, in which marble statues were placed.

The *Thermae* of Agrippa, Nero, Titus, Trajan, Diocletian and Constantine were more or less on the same principle as those of Caracalla, though they varied in the distribution of their parts. The *Tepidarium*, however, was usually the central point and the whole always laid out on axial lines. Besides these there were hundreds of private baths in Rome, to say nothing of those in almost every private house, heated in the same manner.

Mr. Banister Fletcher, F.R.I.B.A., dealt with the theatres and amphitheatres on January 31, at the British Museum. The Roman theatre did not differ very materially from the Greek, except in the fact that the Greeks always chose the natural slope of a hill out of which to excavate their auditorium, building up only the "skene" or stage wall, whereas the Romans constructed the whole building by means of radiating walls with concrete vaults.

The method was far more costly, but rendered possible the erection of vast edifices, such as their theatres and amphitheatres, on perfectly level ground. An exception to prove this rule is the theatre of Herodes Atticus, which is hollowed out of the Acropolis rock, and partly constructed just as in Greek times.

Most of the Greek theatres, including those in the various states and colonies, were altered and adapted to suit the requirements and tastes of the Latin conquerors, one of the few examples which escaped being the theatre at Epidaurus.

The auditorium of the Greek theatre formed about two-thirds of a circle, whereas in the Roman theatre it only described a semicircle on plan: the central portion or "orchestra" of the Greek theatre, which was a complete circle and in which the dancing and singing took place, was now included in the auditorium, at the same time being converted into half a circle. It was here that the places were reserved for the senators and people of rank, slightly raised wide marble platforms indicating in certain instances where formerly the beautifully carved marble seats of the dignitaries had stood. Many of these seats, as well as those on the podium at the Colosseum, came originally from Greece, and were removed in later times to serve as bishops' thrones in the apses of the early Christian churches.

The stage, which was long and comparatively narrow, was brought forward and became a more important as well as an architectural feature, owing to its permanent nature. It had three entrances, and at the back were dressing rooms, &c., for the use of the actors. It usually had a timber roof which sloped outward towards the auditorium in order that the voice might carry. The rest of the building was covered only with a *velarium*: pierced corbels which received the poles to which it was attached still exist in many of the ruins.

The seats for the spectators were arranged in tiers one above the other, usually a wide *diazoma*, as in the Greek theatre, permitting access from one end of the auditorium to the other. Wide passages and staircases communicated with the external galleries on each storey, in which the audience could take shelter in the event of a shower of rain. A large drain encircling the orchestra carried off the rain-water which fell into the theatre.

Examples at Rome, Orange, Athens, Taormina, &c., were all dealt with in detail by the lecturer.

✦ The amphitheatre was a building essentially characteristic of the Romans, whose love of wholesale butchery contrasts so strongly with the athletic as well as the more refined intellectual pastimes of the Greeks. Its shape was determined by placing together the centres of two theatres, omitting the stages, hence its name. In their successive conquests the Romans carried their customs with them, for an amphitheatre is to be found in almost every Roman settlement; near Dorchester there are remains of one measuring 220 feet long, dating from the time of the Roman occupation.

Gladiatorial combats, which were held in the amphitheatres, had a religious origin which probably came from the Etruscans. Human sacrifice was offered to the "manes" or tutelary spirits of the dead, the mortal combat originally being held in connection with the funeral of some important personage. The slaughter of human victims continued till the year 403 A.D., when the heroic act of an Oriental monk, named Telemachus, who threw himself into the arena as a protest against the awful practice, brought about its final abolition.

The building of the Colosseum was undertaken during the reigns of Vespasian, Titus and Domitian. It was first opened to the public in the year 80 A.D., and was always spoken of by the Romans as "the Flavian," from the gens to which Vespasian belonged. As built by these emperors the upper galleries, beyond the third arcade, were of wood, and continually being destroyed by fire, until erected in stone towards the middle of the third century A.D.

It covers an area of 620 feet by 513, being an ellipse on plan. It has eighty openings on each floor. Those on the ground are numbered to correspond with the blocks of seats inside, for which ivory tickets with the number of the seat and the block and row were issued.

The arena is an oval of 287 by 180 feet. The surrounding podium, on which were placed the thrones for the Emperor and Empress, the Vestal Virgins, the Pontifex Maximus and other dignitaries, was raised 12 feet above the level of the arena; this was also protected by a gilt metal screen with revolving upper rail, to allow no hold in the event of a wild beast making a sudden spring.

The auditorium is constructed of wedge-shaped piers, radiating inwards with raking vaults running downwards to the centre; travertine is used where the greatest pressure has to be met, tufa where there is less weight, and concrete made of soft tufa or light pumice stone for the vaults, which were faced with hard marble stucco in relief. The seats in the auditorium were faced with marble, of which they were stripped in later times.

The dens for the animals were below the podium on a level with the arena, beneath which were wonderful passages and other dens, also appliances for scenery and lifts for producing wild beasts suddenly.

Externally the "orders" are used decoratively, being attached to the piers which support the vaults. The Tuscan, Ionic and Corinthian "orders" are used for the three storeys of colonnades, the upper fourth storey having Corinthian pilasters. Corbel stones of travertine, corresponding to holes in the cornice, 14 feet above them, held the posts to which the velarium was fastened.

The massive blocks of travertine of the façade were attached to each other by means of iron clamps, which during the Middle Ages were removed, leaving the present holes. It is supposed that iron must have been very scarce, as the labour which the removal of these entailed was very great.

The eighty exits afforded by the arcades all round the Colosseum enabled the vast crowds to disperse without confusion. The building was said to hold 87,000 spectators.

The circus was an adaptation of the Greek stadium, but unlike the latter, which was used for foot races and athletic sports, the Roman circus was only used for chariot and other horse races. The Circus Maximus was the oldest in Rome and situated between the Palatine and Aventine Hills; it was originally only filled with wooden seats. The Circus of Maxentius on the Via Appia, two miles from Rome, was built in the year 311 A.D., and is the best remaining example.

The circus was a long arena, circular at one end; along the centre was the "spina," a long, low wall which separated the going from the returning charioteers. It was slightly inclined to one side, being wider towards the starting-point to allow more room for the chariots. On the spina were placed obelisks, ædiculæ, statues, &c. The starting-point was formed by a row of small vaulted chambers or "carceres," which the competing charioteers occupied.

According to Pliny the Circus of Maxentius held 250,000 spectators. With most of the other buildings in Rome, it served to feed the limekilns of the city during the Middle Ages.

GUILD OF ARCHITECTS' ASSISTANTS.

THIS body at a meeting held at Prince Henry's Room, Fleet Street, on February 7, had before them a "Mock Arbitration Case," arranged by Mr. J. Gerald Large, P.A.S.I.

The case was assumed to have arisen through certain amendments being demanded by the district surveyor, the architect refusing to accept the surveyor's interpretation of the Act. The builder, however, carried out the instructions of the district surveyor, contending that he had power to do so, as provided by Clause 5 of the R.I.B.A. Contract. The result is a dispute between himself and the building owner, the matter being referred to arbitration for settlement. The building owner makes a counter-claim for damages.

Mr. J. H. Elder Duncan, Vice President, in the Chair, acted as arbitrator; Mr. J. Gerald Large, P.A.S.I., counsel for the plaintiff, Mr. J. V. Hibbert, F.S.I.; Mr. S. Douglas Topley, A.R.I.B.A., counsel for the defendant, Mr. John F. Burkinshaw, Messrs. H. C. Bishop, A.R.I.B.A., F. R. Chalmers, E. J. Dixon, A.R.I.B.A., and T. H. B. Scott as witnesses.

The proceedings were entirely formal in character, resulting in judgment for the plaintiff, both claims being well contested, and the members taking part showed much enthusiasm. They would, however, probably find it a rather more serious matter giving evidence in a material case in real practice before an arbitrator.

The evening was undoubtedly instructive to those members whose professional experience has not been associated with arbitration cases, and one of the objects of the Guild is to help its members in matters of professional interest not always afforded in the office.

OUR CONTEMPORARIES FROM OVERSEAS.

THE *American Architect* (New York) gives us illustrations of some country houses by Mr. Guy Lowell, Messrs. James S. Lee & Davis, and Messrs. McGrath & Kiessling. These are all examples of the use of stucco finish for external walling. An article on the Leaning Baptistery of Pisa by Professor Goodyear shows that this building is built not vertical but at right angles to the sloping surface of the ground on which it stands, so that there is an inclination of 15 inches from west to east.

Berliner Architekturwelt (Berlin) has this month for its principal subject the Kaiser Wilhelm Academy at Berlin, of which Messrs. Cremer & Wolfenstein are the architects, and which has been five years in building from June, 1905, to June, 1910. The building is monumental and dignified, treated in the spirit of the late German Renaissance with scarcely any tincture of "neu-bau" feeling. The remainder of the illustrations show many varieties of recent buildings in Berlin and its environs, and examples of the decorative arts connected with building. A very cleverly piquant design of Messrs. E. Schutze & O. Kohtz for shops in the Kanonierstrasse, Berlin, is a welcome change from the flatness of usual street architecture.

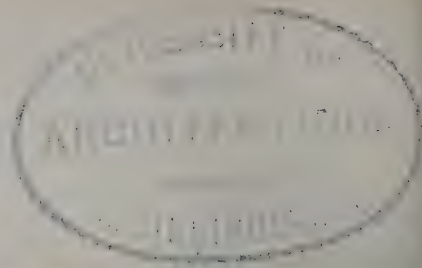
Der Architekt (Vienna) has an article on modern English architecture illustrated by examples of the work of Mr. C. F. A. Voysey and Mr. W. H. Bidlake. The Austrian work illustrated is of an extreme Wagnerian type of "neu-bau" in the shape of designs for a theatre and for a bathing establishment.

Het Huis (Amsterdam) contains an historical and descriptive account of the house of Maarten V. Rossem (Duivelshuis) at Arnheim, in which the various changes in its appearance from the eighteenth century to its latest restoration in 1900 are illustrated. An article on Sir Alma Tadema's house also appears in our contemporary.

The Architectural Record (New York) has for its principal feature an article on English roadside cottages. Professor Adshead contributes a "Comparison of modern American Architecture with that of European Cities." The series on the architecture of American colleges now deals with Brown, Bowdoin, Trinity and Wesleyan. Other papers are "Studies of Design without Ornament," an appreciation of modern warehouse buildings in the States, and a tribute to Thomas Jefferson, the architect.

THE Local Government Board have informed the Lytham Council that they are prepared to entertain an application for a provisional order to enable the Council to acquire compulsorily land for a site and the erection of a market hall and public hall. It is desired to secure a piece of freehold land in Market Square.

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The Architect, Feb. 17th 1911.





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CARVED WOOD CHIMNEY-PIECE IN BOARD ROOM, OFFICES OF THE METROPOLITAN WATER BOARD,
(NEW RIVER COMPANY), CLERKENWELL.



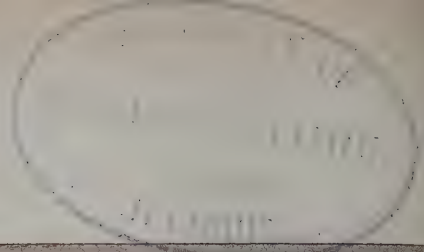
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FIGURE OF ST. MARK: TYROLESE WOOD-CARVING, 15TH CENTURY.

The Architect, Feb 17th 1911.



FIGURE OF ST. LUKE: TYROLESE WOOD-CARVING, 15TH CENTURY



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ENGLISH CARVED MAHOGANY FRAME, EARLY 18TH CENTURY.

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DUTCH CARVED OAK DOORS FROM AN ECCLESIASTICAL SCREEN. ABOUT 1700 A.D.

The Architect.

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FORTHCOMING EVENTS.

Saturday, February 25.
Royal Institution : Mr. T. G. Jackson, R.A., on "Architecture—The Byzantine and Romanesque Period" (third lecture).
Monday, February 27.
Royal Institute of British Architects : Business Meeting. Election of Royal Gold Medallist. Election of Members.
Royal Academy : Lectures on Architecture by Professor R. T. Blomfield, A.R.A. : (3) "The End of Gothic in France."
Victoria and Albert Museum : Mr. Banister Fletcher on "Spanish Mediæval Architecture" (University of London lectures).
Tuesday, February 28.
Nottingham Architectural Society : Mr. A. N. Bromley on "Water Colour as an Aid to Architecture."
British Museum : Mr. Banister Fletcher on "Early Christian Architecture in Rome" (University of London lectures).
Surveyors' Institution : Annual Dinner.
Wednesday, March 1.
Edinburgh Architectural Association : Mr. J. A. Williamson on "Notes on the recent International Town Planning Conference."
Carpenters' Company : Mr. Arthur Keen on "Joinery in Old London."

THE ARTISTIC DEVELOPMENT OF LONDON.

HE means by which Mr. PAUL WATERHOUSE proposes to further the artistic or architectural development of London are worthy of careful consideration. He postulates that as a first essential control of architectural design is necessary. As we view the recently-erected buildings in the Metropolis we must recognise that there is a large amount of excellent architectural design exemplified in all directions, but on the other hand we are bound to admit that there are still being placed on our streets elevations that are very far from beautiful from the evident lack on the part of their authors not only of striking artistic ability, but even of the rudimentary knowledge of the elements of good design in architecture. Happily, to-day the fairly creditable if not the comparatively excellent is far more prevalent in our metropolitan architecture than even the obviously feeble, still more the flagrantly ignorant. Hence, spite of the general high level of achievement, we must grant Mr. WATERHOUSE his postulate that some artistic sense should ever be watchfully controlling.

We agree with Mr. WATERHOUSE that no one man could successfully cope with the arduous labour of controlling the whole of London's modern architecture, and therefore if there is to be control it must be subdivided amongst many hands. Thus, the suggestion of the appointment of borough architects, each of whom should be the arbiter of artistic fitness in the district over which he presided, has apparently an element of wisdom.

But what would happen if the scheme were put into operation? A design for a certain proposed building could be submitted to the borough architect clearly, let us suppose, void of all artistic merit, even perhaps hopelessly incompetent. Is the official architect to say to the author: "Take this away and bring me something better"? even though it may be patent that the original designer is quite incapable himself of producing a building that might, on a lenient view, be passed as fairly satisfactory. The borough architect could not himself make the fresh design, because Mr. WATERHOUSE debars him from private engagements in his own district, and rightly so, for otherwise the occupancy of the post would speedily lead to a practical monopoly, in many cases, of the architectural design of a particular district.

Would Mr. WATERHOUSE allow his official to prescribe, in such a case as we are supposing, that Mr. A. or Mr. B. should be called in to assist? This solution of the problem would certainly lead to favouritism, or to what would be almost as bad, to a suspicion of favouritism. It would besides put the original architect in a position that a self-respecting professional man would be satisfied to

occupy. No architect would care to go to his client and say: "My design is so unsatisfactory that I must ask you to allow Mr. A. to be associated with me," and would not the client be justified in replying: "I do not admire Mr. A.'s designs. If you are not to be allowed to do the work I have entrusted to you, I should prefer Mr. M."?

There is another aspect of the question that demands consideration. Presumably, in Mr. WATERHOUSE's scheme the borough architect would be selected on account of his previous artistic productions. Now, it almost invariably is the case that those architects who, by their works, have shown their artistic capability, are men of marked individuality and idiosyncrasy, which could not fail to be reflected in the architecture produced under their control. Hence, in one borough we should have a wave of some particular phase or mode of current architectural predilection which would be liable to be completely altered on a change of individualism in control, and would be entirely different from that prevailing in the next-door boroughs. So that the history of the future architectural development of London would be no more than a record of the influence of the varied idiosyncrasies that happened to be in control at specific periods. We do not believe that the constitution of a board of borough architects would be sufficient to counteract this tendency.

Mr. WATERHOUSE laid down the axiom that the houses of our streets may be beautiful individually or collectively. We suspect him of a desire that there should be in London more beauty of a collective type. As we have seen, the appointment of great artists as borough architects would not tend to the fulfilment of this desire. We have in London still remaining to us some examples of eighteenth and early nineteenth century attempts at this collective beauty, but it is beyond question that such a development is wholly antagonistic to the tendency of London's architectural growth in our own times.

It is within the memory of us all that the London County Council set out with the intention of making Aldwych and Kingsway an example of modern architecture on well-regulated lines of collective beauty. But events have proved too strong for them, and these thoroughfares are in course of becoming, instead, a typical demonstration of individualism and its predominance in modern English architecture. Nor need this be altogether regretted. Our opinions may vary as to the relative merits of the designs that have been and are taking shape in this latest Metropolitan development of architecture, but in fairness we think it must be admitted that there is nothing actually bad in the specimens of modern architectural design to be there seen. For this we have no doubt in some measure to thank the control



POPPYHEAD AT ST. DAVIDS CATHEDRAL.

that has been exercised by the London County Council, and especially beyond doubt the influence of the able and catholic discernment and judgment of Mr. RILEY.

We have, therefore, in Aldwych and Kingsway a justification of Mr. WATERHOUSE's plea for the control of architectural design in London, and also an exemplification of the kind of control that is required. We do not want our arbiters of taste to be artists of limited view and strong predilections in design, but men of wide sympathies and clear, impartial judgment, so that excellence of design may be admitted in whatever phase of Classic, Renaissance, Gothic, Romanesque, or even New Art it may be clothed, and the characteristic individualism of our modern English architecture may be preserved.

NOTES AND COMMENTS.

THE fencing match between the London County Council and H.M. Office of Works is still going on, the compromise by which some sort of a road will be made for the Coronation procession to pass under the Admiralty arch and so into Whitehall being no more than an armistice, as Sir G. L. GOMME writes on behalf of the Council:—"I am to state that, after the completion of the widening of the roadway for the purpose of the Coronation, the Council cannot accept any further responsibility for an improvement which, at its inception, was considered a Government scheme for a stately entrance for Buckingham Palace and St. James's Park, and has since been carried forward without consultation with the Council, but I am to add that the Council is willing, in view of the difference of opinion that exists between H.M. Office of Works and the Council on the subject of their respective liabilities, to submit to arbitration the question of the proportions which the Council and the Government should contribute towards the completion of this improvement as a whole." To which Sir SCHOMBERG McDONNELL replies:—"With regard to the final paragraph of your letter, I am to say that the First Commissioner observes that certain questions are

involved which have not yet been under discussion. The immediate point being the preparation of the road for the Coronation, Lord BEAUCHAMP does not think that any advantage would be gained by any comment upon them at this stage."

THE King EDWARD Memorial for Scotland is not yet National, as the Corporation of Glasgow by a large majority has expressed its disapproval of the decision by the Scottish National Committee to adopt a scheme in connection with Holyrood Palace as the form of the Memorial. The attitude of the Glasgow Corporation seems to display a foolish and unreasonable jealousy that is very regrettable in such a connection. If Scotland is to have a National Memorial to King EDWARD why should all graciousness be taken out of it by a petty squabble like this? Glasgow may be an important city, and its citizens may think themselves of high importance, but Edinburgh is still the capital city of Scotland, and therefore to our thinking quite the most suitable location for a National Memorial.

THE Bishop of BIRMINGHAM in his address to the members of the Birmingham Architectural Association, gave some practical hints on church planning which are worthy of remembrance. His objection to a narrow step on the west side of the altar, however, scarcely arises from the default of the architects, who have built to suit the ritual in vogue when they were required to provide a holy table and not an altar before the eastward position had become as general as it is to-day.

DR. GORE's stricture on communion rails is true enough, and he was justified in saying:—"It appears to me incredible, but it is true, that in a great number of churches communicants are made to kneel on a lower level than the person who is to administer the cup to them. And a high rail is intruded. The result is that at the most solemn moment, when you want them to be thinking about nothing except the spiritual meaning of the act they are engaged upon, and when you yourself want to be able to perform what is an exceedingly solemn act with a totally free and disengaged mind, you are entirely occupied in trying to insert a cup in between a lofty rail—very likely with spikes of some kind—and under the rim of a large hat, and it is a tormenting process."

WE can also approve his condemnation of the "dim religious light," which was in the past a concomitant of the selection of Early English as the most suitable period on which to base modern churches, because it was the cheapest. In our most modern churches, however, the preference for a version of Perpendicular has removed the objection to which the Bishop took exception.

It is unusual to find an ecclesiastic who, like Bishop GORE, adopts the eastward position objecting to the monastic ideal which lingered on in the construction of churches, as when the choir was screened off or hedged in and advocating the ideal represented in the earliest Christian churches, when the whole congregation and not the choir, or any one part of it, was the consecrated body. He urged that it was the earlier, the congregational ideal they ought to try and build for. Looking at a modern church, one might ask, he said:—"I wonder why these boys and choir men are selected for this extraordinary seclusion. I never heard that they are particularly holy or anything of that kind." There was a good deal to be said for the choir being in the middle of the church from the point of view of their leading the congregation there was very little to be said for their being shut up behind screens in a narrow choir.

PERHAPS of all Bishop GORE's recommendations the most sound was that there should be attached to every church its architect's design for its gradual beautification or decoration, and his proposal, as a sort of a bribe, that it should be unnecessary to obtain a faculty when the decoration was in accordance with the architect's design.



POPPYHEAD AT CHESTER CATHEDRAL.

that principle were once established they would get rid of what was at present a grave disaster, namely, that every individual who wished to put up a memorial to wife or parents "goes off to an architect or designer and gets the thing drawn out; then comes with it and says, 'I want to put this up to my mother,' and considers himself aggrieved or offended in his tenderest susceptibilities unless he is allowed to put it up."

THE undeveloped wealth of the United Kingdom in beautiful building stones, particularly marble, is perhaps nowhere more remarkable than in the island of Skye, where, despite past failures, we learn from the *Sheffield Daily Telegraph*, a fresh effort is to be made to exploit its undoubted resources in this direction. After some years of prospecting work, an Edinburgh company, styled "Skye Marble, Ltd.," in conjunction with another company called "The British and Foreign Marble Company," have decided to quarry the marble in Skye on an extensive scale. The capital subscribed by the two companies runs into five figures, and elaborate preparations are being made to work the rich deposits that lie in the neighbourhood of the village of Broadford. A careful survey of the marble resources of this part of the island has encouraged the promoters to believe that Skye marble will become a formidable competitor of the Italian, Greek, and French marbles which, at present, are so largely imported into this country for decorative purposes. They look forward hopefully to a time when the monuments in our public squares will no longer be composed of Carrara marble, but of the mineral brought from the "misty isle of Skye."

It has been suggested by Mr. ALFRED T. DAVIES, Secretary of the Welsh Department of the Board of Education, that the new school which is about to be erected in the parish of Gyffin, near Conway, in Carnarvonshire, should be called "Ysgol Goffa JOHN GIBSON" (the JOHN GIBSON Memorial School). Mr. DAVIES states that Gyffin

was the birthplace of JOHN GIBSON, R.A., and that the school would serve the purpose of keeping green the memory of the great sculptor "in the village in which he first saw the light." There is, however, some difficulty about the matter, and there are valid reasons for supposing that the proposed memorial school should be situated in Denbighshire and not in Carnarvonshire. A leading Welsh authority, after making exhaustive inquiries into the matter, states that JOHN GIBSON was born in the year 1789 in the Baptist chapel-house of Fforddilas, in the parish of Llansantffraid, Glan Conway, in Denbighshire. Neither the month nor the day of his birth is known.

THE TRANSITION OF LONDON'S PLAN, ITS DISAPPEARING LANDMARKS, AND—AFTER.*

TO the occasional visitor no feature can be more striking than the kaleidoscopic changes in what may be termed the structural development of London. This never-ceasing mutation includes not only the formation of new and the widening of old thoroughfares but also the removal and re-building of some of London's most notable landmarks.

The causes may be briefly indicated as the increase in business and traffic and also the modern and healthier tendency to leave the centre and live in the suburbs, which has been so much fostered by the rapid transit, and has also been considerably affected by the operation of Acts relating to housing of the working classes. As regards further street accommodation, there has been no opportunity since the Great Fire for making an important scheme for the proper planning of London. Unfortunately, Wren's plan, which might have set so noteworthy an example, has been rendered abortive by subsequent events. Wren's plan is notable as showing his conception of the necessity for main east and west streets, with focal centres from which other streets should radiate. Each generation appears to have dealt with the question of traffic space about buildings and kindred matters in a way that sufficed only for a time. There has been no comprehensive effort to foresee the wants of the future, and to formulate a practical and rational plan. This default has led to the necessity of very heavy financial expenditure. The London County Council, up to December, 1909, effected, or was in course of carrying out, 133 improvements, estimated to cost $3\frac{1}{2}$ millions sterling, besides contributing $1\frac{1}{2}$ millions towards the cost of 486 local improvements. The Council's predecessors, the Metropolitan Board of Works, expended 10 millions in constructing new, and widening old thoroughfares, and also paid another million towards the cost of local improvements. The outlay of the City of London and the local authorities from 1856 to 1889, exclusive of contributions from the central authority, was over a million sterling, and these bodies are spending from 40,000*l.* to 50,000*l.* per annum with the same object. The City Corporation has also recently initiated works of considerable magnitude, such as the widening of Fleet Street and Bishopsgate Street, which alone are estimated to cost nearly three-quarters of a million sterling.

These improvements have considerably affected London's plan; but it is to be doubted whether the result is in any way adequate. Queen Victoria Street was completed in 1871, Northumberland Avenue in 1876, Shaftesbury Avenue in 1886, Charing Cross Road in 1887, and Rosebery Avenue in 1892; but these important and costly efforts to improve the planning of London must already be considered as almost obsolescent, and can only be regarded as touching the fringe of a great question. As an example of the costliness of the want of sufficient provision for future requirements the improvement of High Street, Kensington, may be quoted. A widening of the south side was carried out in 1866 at a net cost of 126,000*l.* This improvement, however, gave a width of only about 47 feet east of Church Street. It became rapidly apparent that a further widening would be necessary, as this thoroughfare forms the main western outlet, and as early as 1888 a scheme was put forward with this object. It was not, however, until 1899 that powers were obtained to widen on the north side at an estimated cost of 87,500*l.* It will be seen that for nearly one-third of the improvement the widenings have overlapped, and the additional expense entailed thereby might have been avoided if a sufficiently comprehensive scheme had been put forward in 1866. Even now, after an expenditure of 213,500*l.*, the average width to the east of Church Street is only 60 feet,

* Part of a lecture delivered at Carpenters' Hall, February 16, by Mr. W. E. Riley, F.R.I.B.A., superintending architect to the London County Council.

while to the west, at the part where the road was constructed in 1866, the width in one part is only 44 feet. The erection, however, of such large stores as Barker's places the greatest difficulty in the way of any further widening.

The greatest of modern improvements is undoubtedly the large scheme now effected connecting Holborn with the Strand. The subject of forming a connection such as Kingsway was under discussion as far back as 1836. In that year a House of Commons Committee favourably considered the formation of a road, being a continuation of Lincoln's Inn Fields to Newcastle Street, and the widening of Gate Street leading to Holborn. The Report also advised the removal of the houses in Holywell Street so as to widen the Strand. In the year 1847, Mr. J. Pennethorne prepared a plan showing streets from this area from east to west, with suggested spur streets to the Strand near Wellington Street, and also to Lincoln's Inn Fields. In 1878, Mr. Teulon prepared a scheme for a connecting street—the most complete up to this date. It may be of interest to note that this scheme shows an island garden in the Strand, not unlike that recently proposed when the suggested setting back of the Strand frontage was under consideration.

The London County Council considered many plans before deciding on the scheme as now carried out with a 100 feet street at an actual cost of five millions sterling and an estimated net cost of about three-quarters of a million. Previous schemes showing the new thoroughfare terminated by the church of St. Mary-le-Strand had been objected to, and the crescent-shaped Aldwych, with the "island site" between that street and the Strand, was finally decided upon. I think that not only will the broad and generous lines of the scheme be admitted, but also its sanitary effect in abolishing a squalid area. One point of importance was the question of the retention or the removal of the church of St. Mary-le-Strand. This church was designed by James Gibbs, and finished in 1723, and was the architect's first building after his return from Italy. For its position, it would be difficult to arrange a more artistic note. It is erected on a podium or pedestal, and the west portico is very pleasing. I believe it was originally intended to crown the west front by a statue of Queen Anne; but after her death the present tower was substituted. Its suggested removal aroused public opposition, as the church undoubtedly forms a highly picturesque object in all views of the Strand, and its removal would have deprived this part of London of one of its most attractive and interesting features.

An important discussion arose on the line of widening to be adopted at the eastern horn of the crescent to preserve the vista eastwards, including the Law Courts and St. Clement Danes Church, at the eastern end of Aldwych. The body of this church was designed by Wren, but the steeple was finished by his pupil, Gibbs. The most northerly line was suggested by Mr. Hamo Thornycroft, the next by the Further Strand Improvement Committee, the next by the Royal Institute of British Architects, and the most southerly line by myself.

Other expensive widenings to which allusion must be made include that of Long Lane, Southwark, at a cost of nearly 200,000*l.*; Mare Street, Hackney, 660,000*l.*; Goswell Road, 227,000*l.*; Hampstead Road, 245,000*l.*; Piccadilly, 300,000*l.*; the extension of the Thames Embankment and improvements at Millbank, 1,300,000*l.*, and there has thus been an energetic but belated effort to overtake the requirements of the present time. But the very small endeavour which has been made comparatively recently, as a result of the Royal Commission on London Traffic, which sat from 1903-05, shows how supremely difficult it is to give any practical effect to the great problem which has to be dealt with. The average width of the streets widened by the Council is only about 60 feet to 62 feet, and a map has been prepared indicating roads 60 feet and upwards in width. Perhaps the first impression which this map produces is as to the complete want of regulation or design in the lay-out of these main thoroughfares. A generally accepted theory in modern town planning is that focal centres shall be provided from which broad roads shall radiate, and which are joined by concentric streets, and those acquainted with the plans of Paris, Washington, and other cities will appreciate the advantages of this system. The map of Washington shows streets, many of which are 160 feet wide, which converge on centres such as the Capitol, affording not only the magnificence of vista, but, by means of cross streets, convenience of access. Paris is a familiar example of the same principle. It will be seen that London is chiefly remarkable for the absence of such focal centres, and as regards wide streets, it may be noticed how in many main outlets a width of even 60 feet is not sustained. Paris

has 102 miles of streets 98 feet wide or more; London has only 8½ miles in all the streets of that width. It is instructive also to observe how inadequate are the main outlets from London into the country. In many cases even a width of 60 feet is not maintained to the county boundary, and in the south-east and north-east of London such outlets can scarcely be said to exist. Paris has forty-two roads radiating into the surrounding country; London, with a population twice as large, has only twenty. The example of Paris may be cited as a complete contrast to the policy—or lack of policy—which has characterised London street improvement. As is well known, a plan of Paris improvements was drawn up so long ago as the end of the eighteenth century, and this was followed by Haussmann's courageous scheme of the middle of the last century. The policy of systematic development has been continuous in Paris irrespective of changes of Government with a result which is unique.

Even the briefest survey of alterations in London's street plan would be incomplete without a reference to the improvement of the Mall, which is part of the Queen Victoria Memorial. Sir Aston Webb's original proposal provides for a direct and unobstructed access into Charing Cross, a feature which is common to all the schemes then submitted, and it is hoped that an adequate outlet may not remain unprovided. A further important scheme for relieving congestion of traffic was the alteration at the Marble Arch, by the formation of a new road, 100 feet wide, south of the Arch, which was rendered possible by the surrender of a portion of Hyde Park. It was pointed out to the Royal Commission on Traffic that traffic at this point surpassed that at any other in London, and it is hoped that not only will the improvement have a utilitarian value, but that the Arch itself will assume the position of importance which it merits.

The transition of London has its architectural as well as its engineering side. To attain the best results, it is essential that, whilst improved traffic facilities are afforded, architectural treatment of great dignity should be secured, and in the case of the Kingsway improvement the County Council co-operated with the Royal Institute of British Architects in selecting eight architects, who were invited to submit sketches for the various frontages. However desirable, in the interests of architecture, the adoption of any of these schemes would have been, the Council has hesitated to impose upon its lessees any rigid scheme as suggested by these architects, with the result that each design submitted for new buildings is considered on its own merits. The Council has become, because of the reason of the surplus land acquired, one of the largest landowners in London, with a rent-roll of 325,000*l.* a year, and having regard to the interests of the ratepayers, it is most desirous to avoid any restrictions as to elevation, &c., which might delay letting the land. Circumstances have not been altogether propitious. I venture to think the architectural treatment which has so far resulted, as shown by the western end of Aldwych, is above the average of monumental work hitherto attained in Metropolitan improvements. Mention should be made of the Council's Central School of Arts and Crafts erected on the east side of Southampton Row.

It is difficult to believe that this area was but recently covered with evil-looking alleys and courts which gave the district an unenviable notoriety, and any account of the scheme would be incomplete without some reference to the notable landmarks which it caused to disappear. No part of London is richer in historical associations, and many ancient buildings had to be demolished in connection with the improvement. The Benchers' Hall of the New Inn, which was demolished, in Wych Street, was founded in the reign of Edward IV. as an Inn of Chancery appertaining to the Middle Temple. Wych Street contained many of the gable houses in plaster and timber, with projecting front and tiled roofs, which were typical of the old London houses existing before the Great Fire, of which few now remain in London. Drury Lane possessed a notoriety of centuries, and the lodging has now gone at which Pepys tells us he saw "pretty Nell Gwynne standing in her smock-sleeves at bodice, looking upon one. She seemed a mighty prettish creature." The Sardinia Chapel in Lincoln's Inn Fields, which also had to be demolished, was said to be one of the oldest Catholic chapels in London, and the only entrance was originally through No. 54 Lincoln's Inn Fields, the residence of the Sardinian Ambassador. The painting above the altar showing the Descent from the Cross is attributed to Cassa, and is said to have cost 2,500*l.* This has been removed to the new chapel in Kingsway. The interior of the front room of the first floor of 2 Portsmouth Street, Lincoln's Inn Fields, had an elaborate plaster ceiling, deal wall-panelling, and carved pilasters to the mantelpiece, enriched with bunches of

fruit and flowers in high relief. This building was probably erected from the designs of Inigo Jones, who planned the square, about 1618. At the south-west corner of Lincoln's Inn Fields stands the curious little building which is credited as being Dickens's original Old Curiosity Shop. This has for the time being withstood the ravages of the improvement.

A consideration which has largely affected the architectural results of street improvements has been the operation of the Housing and Improvements Acts. In many cases it is stipulated that all persons displaced who had permanent employment in the district should be rehoused within a mile of their former dwelling. In the Kingsway and Southampton Row improvements an area $3\frac{1}{2}$ acres in extent was acquired for this purpose, and with an insanitary area of $1\frac{1}{2}$ acres cleared under the Clerkenwell and Holborn Improvement Scheme, 1899, the Bourne Estate scheme has been laid out, so as to provide accommodation for 3,902 persons.

The average area of the living-rooms is 150 feet super., and that of the bedrooms 100 feet. The average cubic space in the living-room is 1,275 feet, and in the bedrooms 850 feet. The buildings were planned for the internal blocks to lie north and south, so as to obtain the maximum of sunlight in the living-rooms, and each tenement has at least one room looking on to a garden. The type of plan designed for these buildings is an improved "Balcony Plan," arranged so that the living-rooms and bedrooms do not look on to any of the balconies, and have an unobstructed light. The buildings are five storeys in height, with a few attics. Bruce House—a lodging-house at the corner of Kemble Street and Drury Lane—is another example of the fulfilment of part of the obligation to rehouse under the Holborn-to-Strand Improvement. Bruce House contains 709 cubicles, affording accommodation for 698 lodgers (men) and eleven porters. It was opened in 1906, and cost 50,020*l*. Each lodger has an independent cubicle, having a minimum width of 4 feet $10\frac{1}{2}$ inches, with an area of 36 feet super., and lighted by a separate window. The cost of land is a serious handicap to housing operations. Briefly, the financial obligations entails the necessity of building dwellings which will recoup themselves in sixty years, paying sinking fund charges and interest of cost of buildings and of the land, which is written down in value, as if it were earmarked for housing purposes. In the central districts of London it generally costs 15*s*. to 17*s*. per foot super. to clear slums; but very few schemes can be made to pay if the charge for land alone is more than about 5*s*. per foot.

The type of plan used at the Bourne Estate was also adopted for Darcy Buildings, a small five-storey block of dwellings erected for rehousing some of the persons displaced through the widening of Mare Street, Hackney. The site, though narrow, is an excellent one, as the building overlooks London Fields, a permanently-secured open space. Further examples, where the plan of London has been changed by the substitution of healthy dwellings for insanitary slums, are the Boundary Street area, Bethnal Green; Churchway, St. Pancras; Webber Row, Southwark; and Millbank, and of another type the Caledonian Estate, Islington, may be quoted. This estate is about two acres in extent, and being acquired under Part III. of the Housing Act, bears no rehousing obligation. The buildings are five-storey block dwellings, containing 272 tenements. As showing the magnitude of the housing operations and their influence on the disposition of the population, it is interesting to note that the Metropolitan Board of Works, the Council, and other authorities have carried out clearance schemes which displaced over 70,000 persons, for 67,000 of which accommodation has been provided in new dwellings. The great improvements for cross-river communication have had the same engineering and architectural effect on the plan of London. The Corporation of London have given us the Tower Bridge, and the County Council a new bridge at Vauxhall, not to mention the tunnels at Blackwall, Rotherhithe, and Greenwich. These works necessitated not only street-works of a substantial character in the shape of approaches, but involved also the beneficent removal of much slum property, and its replacement with healthier habitations. As regards Vauxhall Bridge, a distinct step forward was made when the aesthetic treatment of it was decided to be a matter for collaboration between engineer and architect. Whether pylons upon the shore piers, or some other such feature, giving emphasis to the bridge, will ever be erected is problematical; but the importance and value of the whole scheme would be materially improved if something of the kind were added. Reference should be made to the sculptors' work on the bridge, the figures in the panels reflecting the greatest

credit on Mr. A. Drury, A.R.A., and Mr. F. W. Pomeroy, A.R.A.

The architectural evolution of London is no less remarkable than the changes which have taken place in its street plan. The authorities have set an example in public buildings, such as the new Local Government Board and other public offices at the corner of Parliament Street and Great George Street, the new War and Admiralty Offices, and the Offices for the Woods and Forests, which have become more spectacular and permanent. The buildings in Great George Street which were demolished to make way for the extension of the new Government offices were of considerable architectural interest. The stone front to the park was designed by Adam, the brick front not being considered satisfactory, and it was observed during the recent demolition that the internal brick walls had little bond with the external. This front was carefully taken down by H.M. Office of Works, and the stones numbered. It is now being re-erected on the Horse Guards Parade as a new front to the Paymaster-General's Office. The general exterior of the old War Office buildings in Pall Mall, of which the east block was erected by Sir John Soane in 1790, is extremely refined and unassuming. The architectural treatment of the staircase well reveals Soane's internal treatment of the cupolettes at the Bank of England. The extreme richness of the Ionic Order, with its deep entablature, embellished with medallions containing bas-reliefs and supporting caryatides, gives great architectural distinction to the staircase. The Secretary of State's room in the internal block, designed by Brettingham, had a remarkably fine ceiling. Mr. Norman Shaw's new police-offices at New Scotland Yard is a building which is generally acknowledged to be one of the most original and skilfully designed of recent years. The deep granite base and happily-arranged fenestration, surmounted by a heavy, well-proportioned cornice, steep slated roof, and symmetrically-disposed, massive chimneys, are thoroughly expressive of the purpose for which the building was designed. This building marks an architectural improvement undoubtedly effective. The Corporation of London have removed the old Newgate Prison, which, whilst no doubt of the greatest historical and architectural interest, had probably outgrown the requirements of the age, and have in its place erected Mr. Mountford's new Court of Justice. The Old Bailey was built by George Dance, the younger, and has been described as the most imaginative building in London and an astounding architectural fluke. No one walking through the streets of London can fail to observe the drastic manner in which old buildings are giving place to those of far greater pretensions. The reconstruction of the buildings between Piccadilly and Regent Street by Mr. Norman Shaw; the demolition of Cockerell's charming example of Greek ornament and detail, at the corner of Agar Street and the Strand, which was replaced by Mr. Percy Adams's building, with the much-discussed statuary; the rebuilding of a portion of Nash's Waterloo Place shows a difference in scale, necessitated by modern requirements, between new and old. All these, and the large number of new theatres, hotels, and the rebuilding of banks and insurance offices, bear testimony to the importance of the change which is not even perturbed by any consideration of antiquity, as is seen by the demolition of Christ's Hospital in Newgate Street. It is to be hoped that the Government will see their way to retain the old premises now vacant in St. Martin's-le-Grand erected by Sir Robert Smirke, and which London can ill afford to lose.

Some reference should be made to the work instituted by the County Council of preserving a suitable record of architectural and historical buildings which are rebuilt or demolished in connection with improvement schemes. Every building is carefully surveyed. This has now been the practice for some years, with the result that a valuable collection of many hundreds of drawings and photographs has been formed, which illustrate a phase of Old London which is rapidly disappearing. Recently the remains of a ship of the Roman period have been unearthed in connection with the excavations for the new County Hall. These remains were discovered 21 feet below the road level. Of oak and carvel construction, the relic measures approximately 38 feet in length by 18 feet in width; but as the stern and a considerable portion are missing, she was probably about 60 feet in length, with a beam of about 16 feet. The joints and construction throughout indicate the vessel as a fine piece of carpentry. It is possible that the ship was constructed by Carausius, as evidenced by the coins found in the boat. The vessel is a most interesting relic of the time of the Roman occupation, and she may have formed one of the fleet belonging to Allectus, which was endeavouring to escape from the

advance of the conquering Romans under Constantius; but, suffering in the conflict, was run aground and sunk, and so left for succeeding ages to bring to light.

It has been seen how rapidly the appearance of the capital of the Empire is changing, and there is little doubt that the change will not cease. There can hardly be found a town or city in Europe which is finished, and when the wonderful examples of rapid growth which are furnished by districts surrounding the Metropolis—such as Walthamstow, East Ham, Edmonton, Acton, Ealing, Willesden, and others—are considered, it is difficult to foresee what the eventual limitations of the capital will be. Inside the county about 5,000 new buildings are being erected each year, and its fringes are in a constant state of transition. We find garden suburbs and garden cities appearing in every direction, from Hampstead to Esher, and from Ruislip to Park Langley; and municipal estates for the accommodation of the working classes are being developed at Norbury, Totterdown, and White Hart Lane, Tottenham. It is of the utmost importance, in view of this rapid extension, that definite action should be taken to obviate any repetition of the unsatisfactory results of the past. It is to be hoped that Mr. John Burns's Town Planning Act may be of service in supplementing some of the deficiencies of inadequate building laws. London has especially suffered in this direction. Hitherto its evolution and extension have been controlled to a limited extent only, the requirements as to width of streets and space about buildings being very restricted in scope, and, provided a certain minimum standard were complied with, the sanction of the Council could not be withheld, or might be set aside on appeal to the tribunal constituted under the Act. As a result, streets have been allowed in which "direct" communication is provided by streets of dog-legged shapes, and examples might be shown, such as that of two adjoining estates of 500 acres, which were deliberately laid out with the express object of preventing access from one to the other. The Building Act was powerless to prevent such a miscarriage of its intentions, involving present inconvenience and future harmfulness. In London there is nothing in the building law to prevent the erection of the interminable unbroken rows of houses whose monotony is almost as offensive as their public inconvenience. If the Town Planning Act can do anything to secure more rational and convenient development, it will have accomplished much.

It is also satisfactory to note that the labours of the Royal Commission on London Traffic have found continuity in the appointment of the London Traffic Branch of the Board of Trade, presided over by Colonel Sir Herbert Jekyll. Reference may here be made to one important thoroughfare which will possibly become of greater importance in the near future. The Royal Commission suggested that Euston and Marylebone Roads might be widened to the width of a first-class street (100 feet) without considerable expense, and it is clear that if these roads and Pentonville Road were made of that width, a very useful east and west communication, separated from the central traffic, would be established. A considerable improvement in Euston Road has already been effected as the result of negotiations between the Council and the Skinners Company, by which the Company have been granted permission to erect buildings in advance of the general line between Tonbridge Street and Mabledon Place, conditionally on surrendering part of the forecourts to the public way. The effect of this proposal will be to secure a thoroughfare approximately 100 feet wide at this part, without expense to the public.

It is, of course, of the utmost importance that traffic and business requirements in the central areas should receive consideration; but a no less pressing need is to establish the main arterial communications with districts surrounding the Metropolis. Not only can main arteries be fixed now much more economically than, say, a decade hence, and in such a manner as to regulate the development of the suburbs, but it is most undesirable that the beautiful parts of South-east London and others on the western boundary which remain uncovered should be built on in the same uninteresting and unsatisfactory manner as other districts in these localities. If the main lines of communication are laid down, there need be little fear for the development of the areas between them. Fortunately, Greater London is amply supplied with open spaces, and such excellent and popular air-spaces as Bushy Park and Hampton Court Gardens, belonging to the Crown; Epping Forest, Burnham Beeches, and Highgate Woods, which are maintained by the Corporation; and Hainault Forest and Marble Hill, which are maintained by the County Council, will, in a few years, be as essential to the life of the greater city as are now the parks and open spaces which form

such a satisfactory feature of the inner town plan. We cannot claim for London any comprehensive development on the lines of Paris; but the present appears to be a suitable opportunity for considering whether its expansion should not be regulated on lines which make as surely for intellectual progress as they do for the purely physical.

A MODELLING DEMONSTRATION AT CARPENTERS' HALL.

(Official Report.)

THE customary Wednesday lecture at Carpenters' Hall was pleasantly varied last week, when Mr. Alfred Drury, A.R.A., gave a demonstration of modelling a bust from life. Of the popularity of this departure there could be no doubt, if one may judge from the size of the audience (which exceeded the hall's capacious seating accommodation), the interest with which the process was watched throughout, and the cordial applause given to the artist at the end. This is not to be wondered at, since a proportion at least of those who regularly attend the valuable lectures arranged by the Carpenters' Company are craftsmen of one sort or another. This class of audience gets weary of the conventional dissertation, and is glad of a change, even though the aid of the magic lantern be summoned to present concrete objects as a reinforcement to abstract theories or historical data. There must always be a greater fascination in watching men "who do things," than listening to those "who say things." In Mr. Drury the Company had selected an artist with a high record of achievement and whose work is to be seen in many different parts of this country. Indeed, more than most sculptors, Mr. Drury has played a part in the artistic development of our towns, having had an unusual number of commissions for architectural sculpture.

It was not, however, in that particular form that the artist chose to show his powers last week. The task he set himself was a difficult one, for in full view of a crowded hall he made a portrait bust of an unfamiliar male model in about sixty or seventy minutes. The unfavourableness of the conditions was increased by the fact that the strong electric light over the platform destroyed the proper facial light and shade. In spite of all these handicaps, Mr. Drury succeeded in building up a most striking portrait-bust on to a roughly shaped piece of clay. It was, as he remarked at the end of the demonstration, to be considered as simply a preparation for a head. The aim had been to catch the character of the model in as short a time as possible. When this was once accomplished a sculptor had only to go on with the detail without sacrificing any of that character in order to arrive at a complete production. In this instance the success of Mr. Drury was unmistakable. The accompanying illustrations show the bust at the point where Mr. Drury ceased work. It may be somewhat difficult for our readers to appreciate it as an impressionist portrait without means of comparing it with the original; and any photograph of the model would be misleading unless taken at the same time, and under the same light conditions as the bust was produced. Regarded merely as lightning modelling from life, it still remains a *tour-de-force* of concentration. Its production was a revelation to many present who had never before observed the almost uncanny dexterity of a sculptor's fingers. In the short time at his disposal Mr. Drury could allow no margin for mistakes, so that the application of every additional piece of clay had to be made with unerring accuracy. His complete success was only attained at the last touch; up till then the bust had been growing by infinite degrees more and more like the model, though not until Mr. Drury said he had done all he cared to do could it have been considered as a satisfactory portrait. But the sculptor appeared to aim, he certainly achieved, something more than an impressionist likeness. The bust, without being in any sense an idealistic representation, was endowed with a vitality and character which marked it out as the work of an artist.

The sculptor's mode of procedure is as follows:—On the piece of lead pipe which supports the head the clay is built on in a small round mass, and is left to get more or less hard so as to form a foundation upon which the head is built. The first thing done is to analyse the character of the sitter, and then to start with the profile, making it as exact as possible. Next comes the general construction. When that is done and the character of the head is obtained it is only a question of entering into the subtle qualities of the delicate plane—all the time still preserving the spontaneity and character.



MODELLED BY MR. ALFRED DRURY, A.R.A., AT CARPENTERS' HALL, FEBRUARY 15.

ROYAL ACADEMY LECTURES ON ARCHITECTURE.

IN this year's course of lectures at the Royal Academy Mr. Reginald Blomfield, A.R.A., continues his detailed studies into the historical development of the French Renaissance. Eventually, we understand, the whole series will appear in a collected form. The four lectures for 1911 are titled (1) "The Du Cerceau"; (2) "French Architecture in the Sixteenth Century"; (3) "The End of Gothic in France"; and (4) "Henri IV." The opening lecture was delivered on Monday last, and dealt with "The Du Cerceau family."

The development of French art was rudely suspended in the last quarter of the sixteenth century. The old generation of artists like Goujon, De l'Orme, Primaticcio, and Lescot had gone, and there was neither money nor opportunity for the exercise of the arts. The interference of Catherine de Medici was also partly to blame, for in her large building schemes she tied down her artists to her own paltry fancies. That any traditions at all survived the chaos was largely attributable to the existence of the powerful Guilds which rendered the practice of the arts a family matter and perpetuated family traditions. For example, the most famous architect of the sixteenth century, Du Cerceau, belonged to the sixteenth century, but there seems to have been a Du Cerceau still at work in the eighteenth

century designing arabesques and the like in the almost forgotten manner of his ancestor.

The founder of this family was Jacques Androuet, who took his further name of Du Cerceau from the sign of the hoop under which he worked at Orleans. He was probably born between 1510 and 1515. Du Cerceau is supposed to have visited Italy and to have returned to Montargis about 1534. French antiquaries contend that he designed the choir of the church at Montargis. Here the only trace of the new manner is on the exterior in the sections of the cornices and the engaged columns and pilasters of the buttresses, though no attempt was made to make the various details work out correctly. All that is really good in the choir is the very interesting late Gothic interior, which does not show the slightest trace of the Renaissance.

There can be no doubt Du Cerceau's time was fully taken up with his innumerable drawings and engravings, and that he made them the business of his life. His first known work was a book of Triumphal Arches, issued at the sign of the Hoop at Orleans, in 1549. In 1550 there followed his books on Temples, "Grotesques" and "Fragments from the Antique." His first "Book of Architecture" was published in Paris in 1559. Soon afterwards he appears to have been ruined by the seizure of his property in the religious strife and to have fled for refuge to Renée of France at Montargis. He next set about his task of illustrating all the great

houses of France. Only the two parts dealing with the Royal Palaces and the most important private houses were completed. The labour of measuring these buildings and drawing them on vellum with that exquisitely delicate line of his, of engraving them on copper and arranging for their publication must have taxed his resources to the uttermost. His industry and fertility of production were immense. Du Cerceau nowhere refers in any of his descriptions to having designed any of the buildings illustrated. Such determined modesty is incompatible with De Geymüller's claim that he also practised as an architect and carried out great works like Charleval for Charles IX. and Verneuil. But his work as a draughtsman and engraver is incontestable and amazing; if he did not succeed in educating his contemporaries in Italian architecture, he had a great, and indeed unfortunate, influence on French designers in nearly all the arts. His published plates of ornaments and furniture have ever since been taken as the typical standard of the art of the French Renaissance.

Considered as archæology, always excepting his drawings of contemporary buildings, Du Cerceau's work has little accuracy or value; for he allowed himself all sorts of licence in what he offered to a public quite uneducated in neo-Classicism. The same criticism applies to his work as a designer, which seems to have no limit or control beyond the sweep of the draughtsman's pencil. The architectural sense is conspicuously absent, and the art is only a reflection of the Italian Renaissance, dimly transmitted through Giulio Romano and Primaticcio. The most elaborate and unreasonable features of French furniture and decoration of the latter part of the sixteenth century are probably due largely to these engraved designs.

The real greatness of Du Cerceau is to be found in his work as a draughtsman and as an engraver. Perhaps there has never been a finer architectural draughtsman, in regard to strict scientific accuracy of presentation and exquisite command of line for that limited purpose. When he set himself to depict the principal buildings of his time in France he made full detail surveys of the buildings on the spot and set them out with vigorous and unsparing accuracy. He revolutionised the contemporary methods of architectural drawing.

Of Du Cerceau's family as little is known as of Du Cerceau himself. Two of his four sons were architects. Baptiste, the eldest, is first heard of in the list of payments of the pensionnaires of Henry III., in which he is described as "architecte à Charleval." The only other known work of his besides this royal palace was the Pont Neuf at Paris, begun in 1578 and not completed at the time of his death in 1590. The prodigious design of Verneuil near Senlis was probably the work of Jehan de Brosse, who married Du Cerceau's sister.

Architecture was at the time still liable to chronic relapses, and so far all that one can look for is evidence of a slowly dawning sense of design, often obscured and retarded by imperfect powers of expression. The Du Cerceau family are typical of this stage, both in their accomplishment and in their failures, in their facility of ornament and in their amateur conception of architectural design. French neo-Classicism had to wait for Francois Mansart before it emerged in full maturity.

GLASGOW INSTITUTE OF ARCHITECTS.

A QUARTERLY general meeting of the Glasgow Institute of Architects was held on the 15th inst. in the secretary's chambers, 115 St. Vincent Street—Mr. John B. Wilson, F.R.I.B.A., president, in the chair. Reference was made to the death of Mr. Alexander Cullen, who had been a member of the Institute since 1897, and of Mr. D. P. Low, who, though not a member of the Institute, belonged to the old Glasgow Architectural Association. The president also referred to the loss which the profession had sustained in the death of Colonel Eustace Balfour. Mr. C. J. Maclean, the secretary, submitted a report on the matters dealt with by the council since the last meeting. The R.I.B.A. Council had agreed that members of allied societies who are eligible as licentiates should be admitted as candidates for election by the Royal Institute Council if they are nominated by the council of their society, such members to be exempt from submitting drawings or other testimonies provided they are certified by their own council as eligible and fit and proper persons to be admitted. It had been decided to support a scheme prepared by the Worshipful Company of Plumbers with reference to standardisation of plumbers' work, which provides for the use of a special trade mark, approved of by

the Board of Trade, by registered plumbers. The council noted with satisfaction the success of two Glasgow students in the R.I.B.A. prize competition—viz., Mr. Herbert I. Honeyman in winning the essay medal and Mr. A. C. Henderson in winning the Arthur Cates competition. The Royal Institute have arranged to send a selection of the prize drawings, which would be exhibited in their rooms at 1 St. Vincent Street, Glasgow, in April next.

The proposed Scottish National Memorial to King Edward VII. came up for consideration. It was unanimously agreed to while expressing sympathy with the proposal for the erection of consumptive sanatoria, something of a monumental nature was more in keeping with the object. The meeting unanimously favoured the restoration of Linlithgow Palace in preference to any other of the proposed schemes.

OUR CONTEMPORARIES FROM OVERSEAS.

THE *American Architect* (New York) illustrates fully the Ritz-Carlton Hotel, New York, of which Messrs. Warr & Wetmore are the architects; and some recently constructed "fireproof" houses by Mr. James Purdon, together with specimens of student work for the Society of Beaux-Arts Architects.

La Construction Moderne (Paris) shows how Mons. Stouffer has added to a mediæval house at Verneuil-sur-Avre, Normandy, without too far departing from the spirit of the old work. We are also given photographs of a model palace of working men's tenements which was exhibited at the Brussels Exposition last year.

Moderne Bauformen (Stuttgart) gives us a collection of examples of the work of modern Swiss architects, showing how thoroughly the "neu-bau" movement has spread into how many of the German cantons. Much, however, of the traditional picturesqueness of Swiss roof treatment and skyline is maintained.

The *Western Architect* (Minneapolis) illustrates a school building at St. Louis, an apartment house at Kansas City, a warehouse at Des Moines, Iowa; and from California, a residence at Los Angeles, a bank at San Francisco, a bungalow and the First Church of Christ Scientist at Pasadena, and residences at Detroit and Minneapolis and an office building at Allentown, Pennsylvania. Illustrated articles are included on the preliminary plans of the Minneapolis Civic Commission, and the possibility of Factory Site Improvement.

ILLUSTRATIONS.

DESIGNS SUBMITTED FOR THE SOANE MEDALLION, 1911.

THE whole of our plates this week are illustrations of the unsuccessful designs submitted in the annual student competitions of the Royal Institute of British Architects for the Soane Medallion, which, although they have not obtained reward, seem to us to be worthy of recognition.

MR. W. ROSS YOUNG, burgh surveyor, North Berwick is preparing plans for a convalescent home to be erected at North Berwick out of funds provided by the Edington bequest of 10,000*l.* and the residue of the estate.

THE Hull Corporation Property Committee had under consideration on the 15th inst. the proposal to pull down the Hull Town Hall in Lowgate and rebuild it in harmony with the new extension, now approaching completion. The scheme is estimated to cost from 20,000*l.* to 25,000*l.*, and it is advocated that, in the event of the old building being retained, about 6,000*l.* would have to be spent upon it in repairs. After discussion, it was resolved to defer any decision for a fortnight.

THE Court of Common Council have adopted a report recommending the enlargement and rebuilding of Gresham College, at the corner of Basinghall Street and Gresham Street, E.C. Options have been procured for acquiring the adjoining site of 1,220 square feet for 20,800*l.* Rough plans have been prepared showing that the united site will admit of buildings being erected thereon to accommodate from 420 to 500 people at an additional maximum cost of 15,000*l.* Half of the cost will, it is proposed, be borne by the Mercers' Company. Gresham College, which for structural reasons has not been used for some months, was erected in 1843 from the designs of Mr. G. Smith.

THE ARCHITECTURAL ASSOCIATION.

A COMBINED ordinary general meeting of the Architectural Association with the Camera Sketch and Debate Club was held on Monday last, the 20th inst., at Tufton Street, S.W., when the chair was taken by Mr. Arthur Keen, president. The following new members were elected:—Messrs. W. H. Lamb, Shepherd's Bush, W.; D. L. Meikleham, New Southgate, N.; W. G. Parkin, Bloomsbury Square, W.C.; and E. P. Trench, Richmond. The reinstatement was announced of Mr. C. E. Simmons.

A combined meeting of the Camera, Sketch and Debate Club with the Junior Art Workers' Guild was announced to take place on March 9. The subject to be announced. The third spring visit will be on March 4, at two o'clock, to the Recruiting Station and Stables, Whitehall, by kind permission of H. M. Office of Works.

Mr. W. G. NEWTON then read the following introductory paper, entitled

Brick is Eminently Suitable for Large Town Buildings.

You will appreciate, Sir, the diffidence with which I address a meeting like this on the subject of brickwork. Your practice is, as your list of sessional papers shows, to ask experts to open discussions on those subjects with which they are particularly intimate, whether it be Professor Lethaby on Greek building, Mr. Gerald Horsley on draughtsmanship, or Mr. Gill on the architect as an artistic failure. Now, Sir, the most affectionate partisan would not accuse me of knowing anything at first hand about brickwork or about large town buildings. I can only hope that I shall be able, in a general survey of the subject, to suggest lines of thought and points for discussion to those whose experience is greater.

Nor am I altogether sure that I understand the title of this paper. When we remember that brick has been the substantial material of so many London buildings—from St. Paul's to the latest stone-fronted shop in Kingsway—are we to consider that the purpose of this paper is to reaffirm the building principles of the last 300 years, as opposed either to a revival of small-stoned Gothic architecture or to the use of ferro-concrete? I think that you would consider it a quibble were I to interpret my title in that way.

I shall take it that the subject we are discussing to-night is the subject of the use of brick as the "unit of construction" in large town buildings. And we shall find that this subject has two aspects:—

1. The properties of the brick as affecting the design. Its colour, texture, and shape. This is the brick considered actively. 2. The properties of the brick in itself. What John Locke would have called its primary qualities. Its power of resistance to attack. This is the brick in the passive voice.

This second aspect is concerned with the body of the building, the first with its soul.

But I feel that we shall be rash in attacking so grave a subject *à priori*, as it were; one saying, "I like bricks," and another, "My dear fellow, what a degraded taste!" No; "each man of us has all the centuries in him." We cannot, until we have attained the post-impressionist position in architecture, sit down and "plant our cities all about" with Robert Louis Stevenson, where

"Great is the palace with pillar and wall,
A sort of tower on the top of it all,
And steps coming down in an orderly way
To where my toy vessels lit safe in the bay,"

and pretend that there never was any day before yesterday. I think it will not be a waste of time if we take an historical survey of the subject and gather ideas of what has been done in other lands and other times.

It is, I believe, customary to begin such an historical survey with the Tower of Babel. It is at least evident from historians and travellers that the great Central Asiatic civilisations built with brick. Herodotus's account of the building of Babylon, with its kiln-burnt bricks, can be verified to-day. Nor were they used only for the great walls, with their houses and carriageway along the top. The Palace of the Kings also, which remains even to this day as a square of 700 yards in length and breadth, is a great "pile of brickwork, chiefly of the finest kind." No less do modern travellers find half sunk in the drifting sand on the Afghan frontiers of Persia the brick walls and domes and tombs of cities of a thousand years ago. The bricks at Zaidan are partly sun-dried and partly kiln-burnt. Probably they were all covered originally with mud or stucco; perhaps painted in bright colours, like the seven walls of Ecbatana.

With Nineveh and Babylon we are accustomed to associate bricks. But they were perhaps hardly less common in Egypt.

"The use of crude brick" (I quote from Canon Rawlinson, "Notes to Herodotus") "was general in Egypt for dwelling-houses, tombs, and ordinary buildings, the walls of towns, fortresses, and the sacred enclosures of temples. Even some small ancient temples were of crude bricks." And Herodotus tells us that King Asychis, "desirous of eclipsing all his predecessors on the throne, left as a monument of his reign a pyramid of brick. It bears an inscription cut in stone, which runs thus:—'Despise me not in comparison with the stone pyramids; for I surpass them all as much as Zeus surpasses the other gods.'" It was built of bricks made from lake mud.

Athens after the battle of Salamis was largely built of sun-dried bricks, as we may infer from the fact that Themistocles's hurriedly-built city walls were of this material (except the lowest 4 feet), and that for these walls, as Thucydides tells us, private houses and public buildings were recklessly demolished. But the Greeks seem to have been in the habit of covering their brick walls with a fine, hard stucco made of marble dust. So fine and good was this that, Vitruvius tells us, the Romans of his day would use slabs of it, cut from old Greek walls, as tops for tables or sideboards.

It is the hackneyed boast of Augustus that he found Rome brick and left it marble. It must be remembered in this connection that the Roman brick which is the admiration of the archaeologist was a product of the Empire, and the only brick familiar to Vitruvius would seem to have been the sun-dried brick. M. Choisy, in his new and excellent edition of "Vitruvius," says:—"In Vitruvius's time the brick hardened in the fire is practically unused." Vitruvius describes three kinds of brick as generally used in his day. Two kinds are square. They are Greek, and are respectively four and five palms in length. The smaller were used for private buildings, the larger for public. The third kind is the Roman brick, and oblong. For an unexplained reason it is called the "Lydian."

But, after all, Vitruvius was dead before Roman architecture began—the architecture of brick and concrete which the legions were to carry with them to the Euphrates, the Rhine, the Forth. And the Roman brick, which Vitruvius had hardly seen, is familiar to the least erudite country parson.

How far the art of brick-making died with the Roman Empire, at least in the most barbarous regions of Europe, such as our own country, is a question which well deserves consideration. It was for long the accepted theory that no buildings were built of brick from the time of the Roman occupation until the reign of Henry VI. This position is adopted almost as a postulate by the eighteenth century writers in the earlier volumes of "Archæologia," and Grose in his "Antiquities" writes thus of Hurstmonceux Castle:—"This castle is built entirely with brick; and it is one of the oldest edifices of that material in this kingdom since its disuse after the Romans left the island."

Doubtless there is much in favour of this theory. The Saxon settler, as is pointed out by Mr. Hudson Turner, probably added very little to the buildings of the country. There is on record the express statement of the inhabitants of London that down to the reign of Stephen their houses were built of wood and thatch. There is no documentary evidence of brick building of an early date. And there is not to be found in England a building earlier than the last half of the thirteenth century of which the material is a brick which can be definitely pronounced to be other than Roman.

So far, then, we have seen that there was no very strong reason why the Saxons or Normans should have made bricks, that there is no evidence of existing remains to show that they did make them, and that there is evidence that they were driven to use Roman bricks.

At the same time there are many strong reasons for qualifying this position. In the first place, it is *à priori* improbable, as is pointed out by Mr. Hussey in "The Glossary of Architecture," that so simple and useful an art should ever have been lost. The necessity of providing tiles would surely have preserved the art of making them, and bricks are not more difficult. Moreover, it seems indisputable that tiles were manufactured in the twelfth and thirteenth centuries. In the year 1289 the Constable of the Tower of London made a yearly profit of some 7l. by selling the clay taken out of the enlarged moat to certain tilers in Smithfield. The name "Wat Tyler," again, seems to indicate the persistence of the calling. And as early as the year 1189 a series of disastrous fires had roused the citizens of London to seek for some method of protecting their mud walls and thatch, and one of their expedients was a close-set covering of tiles.

And if there are few evidences of early brick building in England, some parts of North Europe are rich in them. Mr. Chantrell in the R.I.B.A. Transactions for 1855 reviews

the brick fortifications, church, and town hall of Damme, in West Flanders, of which the first are at least as old as 1380. Even older are the brick churches of Pomerania—churches of great size, many of which are wholly of brick and have brick-vaulted roofs and immense brick mullions. These go back as early as 1311. And on the Baltic coast (where the great confederacy of the Hanseatic cities was developing the commerce and laying the foundations of the prosperity of North Europe) we find the mention of brick as the ordinary building material as early as 1209, when a Building Act was passed after a great fire at Lübeck to ensure that at least the two gable-ends of the houses should be of brick. And these bricks must have been of contemporary manufacture. Roman civilisation never established itself on the Elbe.

It seems, then, reasonable to suggest that the practice of brick-making in England, once initiated by the Roman settlers, never died, though in the course of centuries the type degenerated. The bold frankness of the brickwork in St. Alban's Abbey tower seems to suggest the work of men not unfamiliar with brick, though the materials they used were the Roman bricks of Verulamium. By the end of the fourteenth century, at all events, there can be little doubt that brick was extensively used. In 1382 Michael de la Pole built a great brick house at Kingston-on-Hull and enclosed the town in a brick wall, of which material most of its houses were already built. And we have preserved the building accounts of the North Bar at Beverley, which give a number of names of brick-makers. The date is 1410.

These are town buildings. Now, with the growth of a strong central Government, man dares to leave walled towns and live alone, and the next two centuries turn castles into homes and see the rise of something which the world had never seen before, the English manor-house. It is a period of the greatest significance to the student of brick architecture, a time of the building of East Barsham and Layer Marney, Sutton Place and Bramshill, a time when our country-side was endowed with that grace of stately playfulness which is so peculiarly its charm. But they are irrelevant to our present purpose—the discussion of town building.

And yet the spirit which informs the manor-house informs no less the Inns of Court, of whose

"Bricky towers,

The which on Thames broad aged back doth ride,"

Edmund Spenser writes. And I think it will not be unprofitable to spend a moment analysing the temper of this great brick century, the sixteenth; for so long as we are consciously artificial designers we are using forms of expression that have already been used in the past, as a musician might use an old theme; and it is surely important that we should not use such old themes uncritically.

It is interesting to speculate what would have been the effect on English architecture had she remained officially a Roman Catholic country. The outcome of the divorce of Catherine was to limit in a large degree the intercourse of England with Europe. Italy, Spain, and the southern nations are kept more at a distance, and England turns gradually to the north-west of Europe and the self-emancipating Netherlands. And the architectural importance of this is great. In the first quarter of the sixteenth century the builder, catching the new manner, seems, with his cupulas and "glistening gold," to be building a palace for some Venetian merchant prince or Eastern monarch.

Nonesuch and even Hengrave are almost Oriental. And Venice, if she was the front-door of Europe, was also the threshold of the East. But out of that strange welter of old traditions, of which a single corner of Hengrave, with its Eastern cupola, its Flemish bricks, its mediæval rain-water spout, and its twisted chimneys, is so apt a summary, the English building instinct emerged, and, helped by political forces to shake itself free of that Eastern lavishness, which was least its natural expression, strengthened and solidified upon essentially English lines, and found itself able to deal in its own way with the more spacious ideas and the almost new building material, which were its heritage from the cosmopolitan of the Tudor period.

The English building instinct passed thus into the same serenity of Wren and the eighteenth century.

There is another point of interest in a consideration of design in brickwork from an historical point of view, and that is the question of concealed brickwork. It would, indeed, almost seem that it was only in the seventeenth century that it began to be considered normal to rely on the texture and colour of the material and to build in bare brick. I doubt if it is generally realised how far mediæval buildings were covered with plaster or whitewash. But that such treatment was not abnormal for a building like Old St. Paul's is evident from Wren's report to the King on the suggested repairs

of the cathedral before the Great Fire. "Some," he writes, "may fall so low as to think of piecing up the old Fabrick here with Stone, there with Brick, and Cover all Faults with a Coat of Plaster, leaving it still to Posterity as a further Object of Charity"—where he is evidently deprecating the patchy nature of the work, and not the use of a coat of plaster in itself. A fortnight ago we heard Professor Lethaby, whose mediæval researches are as profound as his Greek, shuddering at the bareness of uncovered brick and stone. I think that there is little doubt that Hengrave and East Barsham Manor (to take two examples) were covered with whitewash or plaster, and possibly enlivened with gold and colour. Many names of places, such as Whitechapel, add force to the suggestion. And that it was the Greek and Roman manner there is not the least doubt: we have already seen the Roman using Greek stucco slabs for his dining-room table.

Now that we have taken a general survey of the methods and of the ideals of those who have built with bricks in the past (if I may call so hasty and imperfect a summary a general survey), I think we are in a better position to consider the future. If we know what has been done we shall attack with more confidence what is to be done.

(To be concluded.)

NOTTINGHAM ARCHITECTURAL SOCIETY.

THE fourth meeting of the Designing Club in connection with the above Society was held on Tuesday evening, February 14. There was a large attendance, Mr. Robert Evans, junr., the president, being chairman. The subject set was "Designs of Ecclesiastical Work," which were criticised by Mr. W. R. Gleave, A.R.I.B.A.

In order to save students the trouble of preparing special drawings for this subject, Mr. Gleave had asked the competitors to send in sketches and drawings from their own portfolios. Messrs. E. H. Heazell, Whittaker, Dickman, E. R. Sutton, and H. Gill also discussed the good points and otherwise of the drawings submitted, which Mr. Gleave had placed in the following order:—Mitre, first; Maltese Cross, second; Busy Bee, third; and The Dean, fourth.

On the proposition of the President, hearty votes of thanks were accorded to Mr. Gleave and to those students who had been courageous enough to submit their efforts to such fierce criticism.

Mr. Gleave, in reply, said that while the criticisms were sometimes severe, they were never intended to be unkind, and he hoped that a severe criticism would spur the competitor to better efforts next time and not discourage him or others in any way.

At the next meeting of the Society on February 28, Mr. Bromley, F.R.I.B.A., will read a paper on "Water Colour as an Aid to Architecture" and will exhibit some of his own work.

THE ILLUMINATING ENGINEERING SOCIETY.

THE LIGHTING OF LIBRARIES.

(Continued from last week.)

MR. A. E. TWENTYMAN (Board of Education) said that the reason for the unsatisfactory lighting of the library at the Board of Education was the uncertainty as to which rooms should be used for the purpose. Three separate locations had been selected and rejected because the rooms were required for other official purposes. As a matter of fact, the architect had designed a chandelier which was to be placed in all rooms used for public purposes, and the library being one of these, these chandeliers were placed down the centre of the room without any consultation with those responsible for keeping the library. The whole matter had been taken out of their hands by the Office of Works.

Mr. W. R. PRIDEAUX (Reform Club Library) said the main library at the Reform Club was one long room, for the general lighting of which there were three clusters—one in the centre of the room and one towards the two ends. This served for the general lighting and also for the lighting of those who sit around the fireplaces, which are near the clusters. In addition, there were tables all down the room, and upon these there are the usual standard lamps. Some of these are fitted with green shades, so that they did not interfere very much with the readers' eyes. He was not quite satisfied with the lighting of his own desk, and thought the

height of the standard was not quite correct, or perhaps the shape of the shade was not accurate. The bookshelves were lighted from the clusters in the ceiling.

Mr. R. W. CHAMBERS (University College Library) said the general library, in this case, was lighted by means of standard lamps on the tables and clusters running down either side of the room for general lighting. He raised the question of whether it would not be better to carry out general lighting by concealed lamps running round the cornice of the room. In his case the room was a white barrel roof, and with reflected light from concealed lamps running along the cornice he thought the general illumination would be much more satisfactory. At present the clusters in his library were not quite satisfactory, although the table lamps were, which, by the way, would be retained with the system of reflected lighting which he had mentioned.

Mr. C. D. DAVIES (Wandsworth Public Libraries) said he had been disappointed that there had been no comparisons made between the cost of gas and electricity. He had had some little trouble in this connection, and decided to use gas at his West Hill Library. The librarian's task was to adapt the places that were given him as well as he could, although committees usually listened to the architects and engineers rather than the librarians. In one case certain lighting which had been recommended by an outside gentleman was a complete failure, and he had been allowed a few shillings to alter the lights, in order to try and make the lighting a little more satisfactory. In another place the lending library had been lighted with all the lights on one switch, with the result that when the librarian wished to have light at his desk he had to light up the whole of the room.

Mr. W. WHITTAKER (Croydon Libraries Committee) said it used not to be the custom for the librarian to be consulted, but now he seemed to be getting more aggressive, and quite rightly so. At the same time the librarian and the illuminating engineer looked at the matter from different points of view, with the result that there was controversy. But he ventured to say that never in this world would the librarian, or the architect, or the illuminating engineer, or all three fused into one, ever succeed in satisfying every reader and every nature. Comparatively little had been said about reflected lighting. That form of lighting was very effective in illuminating the specimens at the museum in Jermyn Street. It might be expensive, but that, in his opinion, was a secondary matter. All lighting systems would be a great deal cheaper in the future. At the same time reflected lighting would not do in all rooms. For instance, the room of the Society of Arts, with its decorated ceiling and walls. Similarly at Croydon, where there was a very fine reference library. It was originally built as a hall, and had been gradually appropriated by the Libraries Committee. In such cases they must take the rooms as they exist and light them in an appropriate way. This showed how different various places were, and he was pleased that no dogmatic statements had been made in the discussion. It was necessary that they should proceed in the true scientific method, viz., by experiment, as only in that way would they get at perfection.

Mr. L. INKSTER (Battersea Public Libraries), in answer to Mr. Davies on the question of gas *versus* electricity, said that ten years ago he gave up gas and never regretted doing so. At the same time they were still experimenting with electricity, and did not think they had got things perfect yet; but they were trying to adapt the light to the varying conditions of their rooms, and believed they would succeed in the course of time.

Mr. PACEY (Westminster Public Libraries) said the question seemed to resolve itself into one of advice from the expert. It was very difficult for the librarian to come to a conclusion, but he would suggest that he should not rely upon the architect, nor the library committee. He should insist upon the illuminating engineer being consulted and having a free hand. Librarians and those responsible for other public institutions should not be laid under the advice of committees or even engineers in other branches of the profession. He would go further, and say that even if a corporation possessed an electrical engineer, he was not necessarily the best person to advise as to the lighting of buildings, because his function was to sell current. One other point was that, in order to get efficient results, it would be necessary for librarians to have the money to keep their walls and ceilings as bright as possible.

THE PRESIDENT, in announcing that the discussion would be adjourned for a fortnight, referred to the suggestion of Mr. Davies that comparisons between gas and electricity should be instituted. Any such comparisons he would most certainly object to, as the function of the Society was to

consider the scientific application of illumination, quite apart from the source of the light. Mr. Whittaker had suggested that they should go back to experiment; but the fact was that they had experimented and did not need to be always doing it. From past experience certain generalisations could be drawn, and the information applied in a practical way. For instance, from the discussion that evening it had come out that for table illumination they must have a minimum of 4 to 5 foot-candles, and for shelf lighting, in order to read the titles of books, there must be a minimum of $1\frac{1}{2}$ foot-candles. If they could specify such things, then they had gone a long way, because the contractor could be compelled to carry out the terms of the specification, in the same way that the terms of an ordinary engineering specification were enforced. They had been told of differences in illumination on different parts of a newspaper. Would they think of accepting a boiler, for instance, which would stand 100 lbs. pressure in one part and only 80 lbs. in another?

A meeting of the Illuminating Engineering Society was held on Tuesday, January 31, at the Royal Society of Arts, to continue the discussion on "Library Lighting" which was commenced, in conjunction with the Library Association, at the meeting on January 16. The President, Professor Silvanus P. Thompson, F.R.S., was again in the Chair.

The Hon. Secretary having read the minutes of the last meeting, proceeded to announce the names of those proposed for membership and also announced that the names of the candidates for membership read at the previous meeting had been accepted by the Council.

The PRESIDENT said that before resuming the discussion on "Library Lighting" he would ask the Hon. Secretary to read a communication from Mr. P. Blagg, dealing with the matter. Mr. Blagg pointed out that general lighting could only be economically used in reading rooms which were always full, and indirect lighting in such cases was useful. He approved of local lighting which was then only necessary to light the lamps which particular readers wanted. Therefore, local switching under the control of the public was desirable. He disagreed with the suggestion made by Mr. Darch that arc lamps should be used for general lighting; the light was not sufficiently steady. Many of the defects in lighting arose from the difficulties experienced by the contractor in getting information as to the future arrangement of the furniture; in many cases by the time this was settled the walls would be plastered and the floor laid so that he had to cut the building about considerably. Table standards made a sound job, but were open to the objection that they fixed the position of the furniture rigidly. For this reason, a combination of the rigid and the flexible, as described by Mr. Darch in connection with the Cripplegate Institute, had distinct advantages.

The PRESIDENT said he had the names of a number of gentlemen who proposed to take part in the discussion, but he did not see Mr. Waldram present. He was an architect who could give some information about the daylight lighting of libraries. He would therefore call on Mr. Wray, of the Fulham Public Libraries.

Mr. W. F. C. WRAY said that from the illustrations that had been put upon the screen the Fulham Libraries came out rather well as compared with some of the other libraries in London, and it was his intention to call the attention of his Committee to this fact. Mr. Darch had given an illustration to show what, in his opinion, would be ideal lighting for a newspaper rack, this representing what actually existed at present, he believed, at Cripplegate. This diagram, however, did not contain the figure of a reader at the stand. From the position of the lamp he thought the average height reader would have done considerable damage to the lamp and the rather fragile metal filament lamp would be liable to be broken. This raised a point in connexion with the desire to obtain ideal lighting, viz. that none of the experts seemed to make any allowance whatever between the stacks of books for three, four or more persons examining the books at the same time. He did not think that Mr. Jast's suggestion to light bookshelves from below, the light being switched on by the reader standing on a bar or rod, was a practical one, but he certainly thought that some system could be introduced whereby linolite could be made to throw light upon the individual bookshelves. This was a problem which so far as he knew, librarians had not been able to overcome, and it was one which lighting experts ought to face as soon as possible. Mr. Hare, the architect of the Fulham library, and also those at Islington, Hammersmith and elsewhere, had given the question of lighting every consideration and he was satisfied, to a certain extent, that the lighting at these places was very good. According to figures that had been compiled there were 2 foot candles at the bottom of the bookshelves at

Islington compared with only 0.4 foot-candles at Fulham, but to compare this properly, he thought that they should also consider the actual cost of the lighting. The gangways at Fulham had four 16 candle-power lamps but the gangways at Islington had seven clusters of three 16 candle-power lamps in each gangway. Thus the cost at Islington of lighting each gangway must be considerably more than at Fulham, and he questioned whether the extra expense was justified for the improvement at the bottom of the shelves.

Mr. HAYDN T. HARRISON said that although he had never had an actual opportunity of carrying out the lighting of a library in his own way, yet it seemed to him that the subject must be divided into two parts, viz. the library itself and the tables at which people want to read and write. As regards the library proper he had very little to say except as regards the suggestion of placing lamps in a trench at the bottom of the bookshelves. This seemed to him rather a complicated way of doing it as far as the lower halves of the shelves were concerned. Personally, he would deal with that by placing the lamps in the gangway in the ordinary way with suitable reflective shades which would bring the light down on to the edges of the books, and use a white drugget or cloth on the floor to reflect a share of the light on to the lower shelves. He thought this a less complicated way, and there could be no objection to the white drugget, because it could be easily cleaned and was in itself an advantage from the sanitary point of view. It should result in the lower halves of the shelves being as well lighted as the upper portion. The question of reading books was to him a much more interesting subject and he had had a good deal to do with that in other directions. Reading is one of the most trying occupations for the eye that we know of, and it was therefore essential that the literature to be read should be illuminated at above a certain degree of excellence. The figures given by Mr. Dow certainly showed that in many libraries the reading of the literature would eventually result in the deterioration of the optic nerve. This, he thought, was brought about because the problem had been tackled by attempting to do the general lighting at the same time as the actual lighting on the books. These two things must be dealt with absolutely separately. Those who were in the habit of reading and writing a great deal learned by actual experience with their own tables that it was better to have a light upon the table, none of the rays from which could get at the eye, and to use a small general light to see their way about the room. If he had the lighting of libraries to undertake he would certainly do it in this way. The lamps on the tables should be absolutely protected so that none of the light was emitted from the tops of the shades. It might be argued that this would be too expensive as it meant a separate light for every reader, but he pointed out that these lights need only be of low candle power. It was well known that a 10 candle-power lamp at a distance of 2 feet from a book was worth a great deal more than a 50 candle-power lamp at a distance of 12 feet. The result was that for ideal reading a small unit of light must be found. Our forefathers were in the habit of using candles properly shaded, and they did not suffer from eye troubles to the same extent that we did at present. In one case he had in hand, there were 8 candle-power lamps in each of the standards; the supply was alternating current and he had adopted 25 volts in order to get that low candle-power lamp. The previous speaker had referred to the fact that metal filament lamps were fragile, but that was due to the fact that the lamps he was referring to were 200 volt lamps with very long and thin filaments. In his own case he was speaking of 25 volt lamps of low candle power on portable standards, the filaments being much stronger. But illuminating engineers dealing with a library must look for the particular class of lamp that would give the best result. As regards general lighting, it was a great pity that the books themselves must be in the same room as the reader, because that meant that the general lighting had to do a great deal more than was necessary for people when reading, but if the total scheme were carried into effect the general lights should be shaded from the eyes of the reader. The figures given by Mr. Dow would enable them to study the question of sufficient lighting for reading and writing. Some people said that 1 foot-candle was sufficient, whereas in a great many instances it was a great deal higher. The room of the Royal Society of Arts, in which they were meeting, was an example. The standards on the table gave nearer 5 foot-candles, but there was a possibility of there being too much illumination, especially when using a shiny paper. In this case the source of light was very often reflected back into the eye and caused a great deal of trouble. He hoped the Society would one day come to an agreement on these points concerning the right illumination for reading and writing.

(To be continued.)

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.

At the meeting of the Society held on Thursday, Feb. 9, when Mr. Sydney D. Kitson, F.R.I.B.A., occupied the chair, Mr. F. C. Eden read a paper on "Varallo, Orta and Varese."

These small towns, situated in the lake district of Northern Italy, had a connecting link in that each possessed a notable sanctuary in its Sacro Monte, and it was to these sanctuaries and the buildings comprising them that the lecturer drew special attention.

They were, he said, started at Varallo in 1491 by Bernardino Caimi, a Franciscan friar of noble Milanese family, who attempted to reproduce the Holy Sepulchre, and probably other holy places as Golgotha and the Grotto of the Nativity. As the work proceeded the idea developed into commemorating the events of the Sacred Narrative by groups of life-size figures so that there are now forty-four chapels upon the Sacro Monte containing these groups of painted imagery.

In infinite variety of plan and design these little buildings gleaming white amongst the tree trunks or against the sky imparted a character of architectural romance to the whole mountain side.

By means of an excellent series of slides comprising views and plans of the principal buildings at each place Mr. Eden illustrated his narrative and urged that, though but the work of obscure or unknown architects, these hitherto almost unnoticed buildings were fair examples of the skilful handling of the "Renaissance box of bricks."

At the close and on the motion of Mr. H. S. Chorley, F.R.I.B.A., seconded by Mr. Fredk. Musto, A.R.I.B.A., a hearty vote of thanks was accorded Mr. Eden for his paper.

The next meeting will be held on Thursday, Feb. 23, when Mr. H. E. Henderson will lecture on the "Minor Domestic Architecture of Yorkshire."

THE PAINT AND VARNISH SOCIETY.

[STANDARDS OF COLOUR.]

An ordinary meeting of the Society was held at St. Bride's Institute on January 12, Mr. G. Depierres, President, occupying the chair.

A discussion on "Standardising Colour" was opened by Mr. Arthur Seymour Jennings with the paper printed in our issue of January 20, and entitled "The Possibility of Introducing a British Standard Colour Card for Paints and Distempers." By means of the lantern the effect of colour viewed in a sodium light was shown and also the effect of various coloured lights upon the spectrum.

The President congratulated Mr. Jennings on the able manner in which he had opened the debate. It was surprising to hear of the extraordinary fact that in no language did there exist exact names for colours, notwithstanding the efforts made by scientists for so many years, and the actual chaos concerning the nomenclature of colour could not be better shown than the example of peacock blue. If that colour were ordered from twenty different paint manufacturers it would not be surprising if twenty different shades were obtained, and the same thing might be said of canary yellow, apple green, leaf green, and many other colours. Consequently names to-day meant very little, and he thought there would be no difficulty in coming to a conclusion that to avoid misapprehension in speaking of colours it was necessary to refer to some invariable type of standard of colour, so that when speaking of blue, for instance, there should be no doubt as to whether the colour represented by Prussian blue or cobalt blue was intended. It might be argued that the establishment of a standard colour card would be an infringement of liberty or an attempt to destroy the individuality of colour makers, but personally he did not think such an argument could have much weight. The modern colour maker could produce every colour or shade imaginable. A fancy name or description might be registered, but it would be absolutely impossible to protect any colour by a patent, or if it were possible to secure such a patent it would be of absolutely no value. The use of the tintometer might have its good points, and he himself had quite an open mind on the subject, but possibly some might think it an unnecessary complication tending to render the already very difficult task much more arduous. There were four main questions before the meeting: (1) Is the standardisation of colour needed? (2) Will such a standardising be to the benefit of the paint manufacturer and paint user? (3) Do you consider the scheme can be carried out? (4) Will you as members of the Paint and Varnish Society support any resolution that may be proposed for the furtherance of the scheme?

In the unavoidable absence of Mr. NOEL HEATON, a communication from him was read by the secretary. Mr. Heaton thought the paint industry would be immensely benefited if some such scheme as Mr. Jennings had outlined could be brought into use, but its practicability at the present moment was another matter. The most obvious criticism, that the conservatism of the trade would not take kindly to any such simplifications of their problems might be summarily dismissed, because everyone was acquainted with and case-hardened against that feature of the paint industry, and it was realised that if no attempt was made to climb the wall of prejudice nothing worth doing would ever be done at all. But it had to be remembered that in certain directions the scheme would meet with interested opposition because there were a large number of people whose commercial existence depended on the present lack of scientific knowledge and the general haphazard methods of the trade. There was also something to be said from the business point of view for the proprietary name, because a man did not want people to associate his colour card with a universal scheme; he invented patent names of his own in order to sell his own goods in competition with his rivals by creating the impression that he and he alone was capable of producing, for example, "Smith's Aeroplane Pink for Painting Park Railings." Looking at the scheme from the technical point of view, it was quite clear from the paper that Mr. Jennings's scheme was for a classification of colours "quite regardless of their pigmentary composition." It was certainly essential in arriving at any such classification to insist upon a divorce between colour and substance. Then came the difficulty which lay in the fact that certain names were intimately connected with both colour and substance, i.e., the name of a particular substance used as a pigment and having that colour. The name of a colour was inevitably derived by association with familiar objects, such as rose, orange, violet, and so on, and so long as people were content to be sentimental and name colours after the flowers of the field, all was plain sailing; but unfortunately in many cases the actual pigmentary substance itself was associated with a characteristic colour, as in the case of vermilion, cobalt, and burnt sienna. Who was to decide what vermilion was, whether it was the name of the colour or of the pigment? Or would the trade be content whichever way it was decided? The scheme of colours would not be acceptable if the colour of vermilion were called by any other name, whilst if it were included there would be difficulty with the colour manufacturers who made vermilion in several different tints. The difficulty might be got over by numbering the tints, but that would at once invite failure, because numbers did not convey ideas, and it would be difficult to remember the number of any particular tint without constant reference to the list. The primary difficulty appeared to him to be one of finding satisfactory nomenclature which would eliminate those points of confusion and at the same time provide a sufficiently descriptive name for each tint, because it was essential to success that every colour name should convey the idea of the colour it represented. It was advisable to taboo empirical and silly names. For example, what was the "Venetian green" referred to by Mr. Jennings? He had never heard of the colour before, and was not anxious to hear of it again. Names of that type, electric blue, Dutch pink, hippopotamus canary, and so forth, should be relegated to the dustbin. Further difficulties in the way of classification arose from the fact that the nature of the surface and the composition and the physical conditions of the pigments used in paint affected the quality of the colour to a certain extent. His own experience, however, was that that was not of so much importance as was imagined, and that it was only with a few exceptional pigments that the selective absorption differed under different conditions of lighting so as to give the pigment a colour quality of its own. The difficulty could be got over by defining a standard composition for each tint, but that would introduce endless complications, and he thought Mr. Jennings was right in confining his scheme entirely to the classification of colour as distinct from substance. He thought Mr. Jennings showed some confusion of ideas in speaking of the scheme as being independent of the spectrum. He could not see the force of the objection that the standard tints might fade, and Mr. Jennings's method of preparing the standard seemed rather crude. He believed it was essential that the scheme should be worked out on the basis of the tintometer, each colour having some definite relation to the next, thus securing a definite and accurate colour scheme. It was curious to note that the tintometer had been used for similar purposes in almost every industry in which colour was a matter of interest except in the paint trade. He had raised objections in the sincere hope that they would be shown to be without foundation, because he thought the idea was a good one and the scheme was badly wanted; but he felt that before anything was attempted there should be a clear idea of what was actually desired, the difficulties that had

to be faced, and how these difficulties were to be surmounted. Personally he thought painters required a little more waking up first, and that the Society should gain a little more status, and instil a little more scientific thought into the industry before it took a step of such far-reaching importance.

Mr. LOVIBOND said that colour standardisation had been the subject of inquiry by many learned bodies, but there had always been theoretical difficulties, and he hoped they would not arise on this occasion, the differences being purely those of condition. The painters developed their colour by a method of analysis, by absorbing the complementaries; whereas scientific men obtained theirs by a method of synthesis, mixing coloured lights so that the one had a complex body and the other a simple body, both being of the same colour but in a different condition. Then there was the difference of observation. The artists observed their colours in diffused daylight, whereas scientific men dealt with the spectrum colours in camera, and the difference in appearance was necessarily great. He was sure that they need not influence the practical question of standardisation.

Mr. Jennings had touched the keynote of the question when he dissociated the standard of colour from the pigmentary name. Pigmentary colour was variable, and might mean anything; whereas the standard colour was constant, as being the ray composition of the light reflected from the pigment itself. With regard to the names of colours, six colours could be distinguished and isolated in the spectrum, and therefore those six must be considered the foundation. Rood stated that the spectrum could only give the names of the colours, but it could also give the harmonious associations. There were great difficulties in the use of the spectrum in standardisation. Taking a line between the yellow and the orange, the sodium line, the yellow and orange overlapped each other. At the sodium point 11 of yellow overlapped 9 of orange, making the 20 into which Rood had divided the spectrum colour depth; 11 of yellow and 9 of orange were the only possible association for those two colours, but in dealing with pigments 11 of yellow could be united with any fraction of orange, or 9 of orange united with any fraction of yellow, so that there were thousands of pigmentary combinations possible with pigments whilst only one was possible with the spectrum. That appears to shut the spectrum out as being available for standardisation.

To him it seemed a very simple matter to produce colour standards. It depended entirely upon the possibility of determining the ray combination of broken light. Every day colours were submitted to him, and he gave the light formula which created that particular sensation in the vision. In average diffused daylight he could make out any one of the 63,000,000 combinations which was distinguishable as a separate colour sensation, and after a little practice it could be determined in two minutes.

With regard to names, popular or technical names could never be destroyed, nor did he think it was desirable. If a man had invented a special combination he should have the right to name it; and to standardise it by measuring the ray combination of the colour was, as already mentioned, a simple matter.

With regard to the quality of the light used, diffused daylight was the only light which gave constant results, and there was a considerable range of diffused daylight when no difference was perceptible. Theoretically, of course, there must be differences for every variation, but they were outside the power of vision to discriminate. He had fixed the limit for his own work between 18 light units and 28, and with few exceptions within those limits the readings were constant. In any other light another condition of things was produced; the ray composition determining a specific colour naturally being altered by the impinging light if the light was abnormal. Sunlight was absolutely out of the question, and artificial lights were comparatively of little use, although most important in one sense, because a designer or artist choosing colours to be used by electric light would naturally choose his colours by that light, though they would not be in harmony in daylight, the colours themselves being constant. Therefore, one of the points to be considered was the division of light into sections—daylight, gaslight and electric light—and it would then be possible to say that by electric light the colour measured so and so, by gaslight so and so, and by daylight so and so.

One of the desirable points was to have a run of colour of one character, with no contrast upon the same card; it was far better to limit the cards each to its own harmony. He thought there was nothing insurmountable in standardisation, and he hoped the Society would succeed in the work, because he believed that it was a duty that had to be undertaken.

(To be continued.)

UNIVERSITY OF LONDON LECTURES ON ARCHITECTURE.

THE lecture at the British Museum by Mr. Banister Fletcher, F.R.I.B.A., on Tuesday, February 7, was on "The Triumphal Arches and Pillars of Victory of the Romans." These works of display and ostentation were erected by emperors or generals to commemorate their triumphs and victories, and as a history graven in stone of their deeds, for many not only bore inscriptions but sculptured reliefs depicting actual events, which have proved most useful in archaeological research. Arches and Pillars of Victory are found in various parts of the Roman Empire as well as in Rome itself, where some of the finest examples exist.

The arches at the entrance to Constitution Hill, the Central arch at Hyde Park Corner and that at the Mall are all modern examples of the one-arch type, of which the Roman examples are the following:—The Arches of Titus, Trajan at Ancona and at Benevento, the Sergii at Pola, Augustus at Susa (Piedmont), Augustus at Aosta (Piedmont), Augustus at Rimini, Hadrian at Athens, St. Rémi near Arles, and the Arch of the Goldsmiths at Rome.

The Arch of Titus in the Forum Romanum was erected in the year 81 A.D. It stands at the foot of the Palatine Hill on the Via Sacra, and was built by Domitian in honour of Vespasian and Titus to commemorate the taking of Jerusalem by the latter. It is 49 feet high and 44 feet wide. In the middle ages a stronghold was built over it by the Frangipani family, which can be seen in old prints, but this tower was removed in 1823. The arch is raised on a podium giving it height and dignity; on either side of the opening are attached half columns but three-quarter columns support the entablature at the angles. The Composite capital, the fifth order of architecture, introduced and invented by the Romans, is here used and is the earliest known example. As its name implies it is composed of the union of two other orders, the Ionic volute with the double row of acanthus leaves of the Corinthian order.

Winged Victories fill the spandrels and sacrificial scenes are represented in the frieze above. Over the entablature is a deep attic storey bearing the inscription and dedication.

The soffit of the arch is richly coffered, the sinkings being ornamented with rosettes; in the centre is an apotheosis of Titus in relief being borne up to heaven by an eagle. Below this two carved panels, forming the inner jambs of the arch, represent the triumphal procession of Titus, the horses of whose quadriga are led by Roma while Victory crowns him. On the opposite side are seen the spoils taken from the Temple in Jerusalem, the seven-branched golden candlestick, the table for the shewbread, the golden trumpet and other trophies carried in triumph.

The Arch of Germanicus at Saintes on the left bank of the Charente is an example of the two-arch type. It was erected by Augustus in honour of Germanicus, the son of Nero and Antonia, who was born B.C. 15. He fought against the Germans with Tiberius. When mutiny broke out on the death of Augustus, A.D. 14, he had command of the troops in Germany, and eventually conquered the whole country between the Rhine and the Elbe.

The monument consists of two semi-circular archways each having a span of only 13 feet. Corinthian pilasters of stumpy proportion support an entablature which forms the impost for the arches and also carries a second order of short columns, above which is an entablature and attic; three-quarter columns are placed at the angles. The whole is raised on a podium.

The following are examples of the three-arch type:—The Arch of Septimius Severus, the Arch of Constantine, the Arch at Orange, the Porte de Mars at Rheims and the Arch at Palmyra in Syria.

The Arch of Septimius Severus was erected in honour of the Parthian and Arabian victories of this emperor and his two sons, Geta and Caracalla. It is 72 feet high and has a total width of 82 feet. Originally it was surmounted by a chariot group of the emperor and his two sons, the former crowned by a Victory. In the middle ages the arch was converted into a castle and later became embedded in rubbish, but was unearthed by Pope Pius VII. in 1803.

It is held that the archway was only accessible by steps on one side and that for triumphal processions these were covered over with planks. Pedestals support detached columns in front of pilasters, both of which are of the Composite order. The central arch measures 39 feet 8 inches high by 22 feet 3 inches wide. Sculptured Victories fill the spandrel.

The two arches for pedestrians are 25 feet high by 9 feet

8 inches wide. One of the sculptured panels represents the raising of the siege of Nisibis in the Parthian war, the other the treaty with Armenia and the siege of Atræ. The attic bears an inscription, the letters of which were originally filled in with bronze, recording the good works of Septimius Severus. The bronze was removed in the mediæval period. The side arches have openings communicating with the central arch. There is in the pier on the south side a marble staircase leading to the attic storey; these stairs are lit by a tiny hole serving as window. The entablature has no modillions but the dentil course and egg and tongue mouldings.

The Janus is an example of the four-arch type; also the Arch of Caracalla at Tebessa in Algeria.

Trajan's column formed part of the magnificent scheme which was the work of Apollodorus of Damascus. The column did not stand in the Forum but in the court on the opposite side of the basilica and facing the Temple. It is a record in marble of the deeds of Trajan, whose ashes were buried in a tomb chamber beneath the column in a golden urn. This chamber is reached by a door in the pedestal leading also to the internal spiral staircase in the shaft of the column. The pedestal, which is 16 feet 8 inches square and 18 feet high, is ornamented with trophies taken in the Dacian campaigns. The torus moulding of the base is carved with laurel leaves. The shaft, which measures 12 feet in diameter below and 10 feet above, is ornamented with a spiral scroll 3 feet 6 inches wide, which, if unfurled would measure 800 feet long.

The sculptures on the scroll, which include over 2,500 figures, represent a complete history of Trajan's two Dacian campaigns, giving in detail the military and engineering methods employed. These sculptures could be well seen from the galleries in several storeys of the basilica and the two libraries which formed the three sides of the court in which the column stood.

The Doric capital in one block of marble, 14 feet square by 5 feet high, supported a colossal gilt bronze statue of Trajan nearly 20 feet high. The existing statue of St. Peter was placed there by Pope Sixtus V. in 1588.

Another example is the column of Marcus Aurelius which formerly stood in front of a temple dedicated to that emperor. It closely resembles that of Trajan and is also ornamented with a spiral band of sculpture depicting scenes of the victories of Marcus Aurelius over the German tribes on the Danube.

THE USE OF TRASS.*

THE great advantages to be derived from trass as an admixture for mortar are demonstrated in the only available practical manner by examples of ancient structures which still defy the ravages of time and accident. These results we are able to show approximately by tests conducted by more or less artificial means in the laboratory. Such tests can, however, be made more reliable by a careful selection of materials and by accurate calculations of the proportions in which these materials are to be used. The experiments should also be carried out by men of trained experience in such work, and not as is often the practice delegated to pupils or clerks of works, who have not had any special course of training.

It is further desirable that the peculiar necessities of each class of work should be carefully considered in order to ensure permanent results in this important adjunct of modern building work, and that the laboratory tests should be made with the same materials and under the same conditions as exist on the actual work.

If these are not closely observed the information obtained from the tests will be of little practical value, or at any rate entirely misleading, as for instance, if cement, lime, or trass be tested alone, or in association with, aggregates dissimilar to those which will be ultimately employed in the actual work, or under conditions of humidity and temperature different from those which will then constitute their environment, the data obtained in the laboratory cannot be relied on to ensure successful results.

It must also be borne in mind that although the binding materials, cement, lime, and trass may be of the highest quality, the resultant mixture of mortar may be inferior or even useless, owing to an absence of requisite care in the selection, proportioning, or grading of the sand and stone, which form the aggregates and incidentally, perhaps, the largest proportion of the mixture.

* A paper read at a sectional meeting of the National Association of Technical Engineers of Germany by Mr. J. Mund Cologne.

A great impetus has been given to the use of trass in building mortars by the appointment some twenty-five years ago of a commission on which were represented leading engineers and architects, together with cement manufacturers, and lime and trass quarry owners.

This commission was subsidised by the Government, and was in connection with the Royal Experimental Institute of Charlottenburg. Amongst its principal objects were those of dealing in a practical manner with the important matter of building materials on the lines indicated above, and in addition to prevent the erroneous deductions which may be obtained from tests carried out in a manner less in accordance with actual conditions.

While the use of trass in mortar and concrete had been general for engineering construction work both when under water and also when below ground for foundations, the attention of the commission was also directed to the advantages which it offered over the existing practice, by its use as an admixture for mortar in the superstructure.

To this end the specifications which lacked detail in other respects were revised, and a series of careful tests were made on new lines which gave interesting and successful results.

As a consequence, leading building engineers and architects of public works adopted these revised specifications for mortars with such modifications as were suited to the peculiar necessities of condition and environment.

The chief points for consideration in arranging the specification for mortar are strength, density, permanency and economy in cost; at the same time due regard must be paid to the quality and form of the aggregates which are available in the locality.

Amongst many other public buildings the following examples are submitted, in which specifications for mortars were drawn up in accordance with the results of the tests referred to, trass with fat lime being substituted for the hydraulic and other more or less impure limes which it had formerly been the practice to use:—New Post Office, Cologne 1892, Law Courts, Cologne 1893, Library and Record Office 1894. For these collectively some 3,000 tons of trass were used.

The Government architects of the above buildings, Mr. Brugger and Mr. Trimborn, have kindly supplied copies of specifications and comparisons of cost for the different mortars used on the work, and they have expressed their unqualified approval of results obtained.

The specification of mortar for the whole of the Library and Record Office, of which Mr. Brugger was architect, is as follows:—1 volume of trass, 2 volumes of fat lime putty, 5 volumes sand. This mixture possessed the highest efficiency in point of strength, density and cheapness as compared with the mortar composed of 1 volume hydraulic lime, 2½ volumes sand, which was the specification formerly in general use for the same class of building.

In the New Post Office and Law Courts, of which Mr. Trimborn was architect, the specification was varied in respect to proportion of sand, but no hydraulic lime was used for either foundations or superstructure. For these works the following specification was adopted:—1 volume of trass, 1 volume of fat lime, 3 to 4 volumes of sand. In a communication the architect states:—"The walls built with this mortar are excessively strong and the admixture of trass in the mortar gave much better results than could have been obtained by the use of hydraulic lime or cement for the same purpose."

For the building of the gas works for the town of Mulheim, the Government architect, Mr. Rathke, used similar specifications, the mortar being composed of equal volumes of fat lime and trass to 3 volumes of sand. Mr. Rathke reports that the mortar gave results in every way superior to mortar that contained hydraulic lime.

In the foregoing illustrations there existed no abnormal difficulties due to wet ground, and therefore a mortar of a high degree of hydraulicity was unnecessary.

Where, however, wet ground is encountered, it is necessary to use a mortar of a greater degree of hydraulicity, and the following proportions have been found the most suitable in order to secure an absolutely water-tight mixture:—1 volume trass, 1 volume fat lime, 1 to 1½ volumes sand.

It is well known to architects and builders that in cases where the mortar is not well flushed, percolation of water either under slight pressure or by capillary attraction usually takes place by way of the joints, and stone of a porous nature or badly burnt bricks could not be allowed to be used.

Owing to the natural conditions of low-lying water-bearing ground, the Dutch architects and builders have long realised the necessity for a careful selection of impervious building materials, and for the preparation of dense insoluble mortars, for which reason hard burnt bricks and trass lime mortars have been in common use in Holland for centuries.

Most of the buildings in Haarlem, Rotterdam, Amsterdam

and The Hague are evidence of the success which has attended this practice, as although nearly all the buildings have their foundations below normal water level, they show few signs of dampness or depreciation due to this cause.

The new railway station at Amsterdam may be taken as an example of a recent building on which mortar that contained trass has been used.

The volumes of lime and trass are varied proportionately to meet the necessities of the varying degrees of moisture to which the foundations may be subjected, and the proportions of the two former ingredients are reduced for the superstructure, where a less dense mortar will fulfil the required conditions of strength to maintain the stability of the building while at the same time effecting an economy in cost.

It may be suggested that some of the proved advantages of trass lime mortar may be obtained by the use of Portland cement mortar, but it is unnecessary to point out that the theoretical advantages of cement mortar are entirely discounted by the difficulties attending its use in actual practice. If the mortar is sufficiently rich in Portland cement, it cannot be spread unless water is continually added, and the stones or bricks also must be kept wetted to prevent the water from the mortar being absorbed. The result is that very little of the cement eventually remains in the mortar. This absorption does not take place in trass-lime or even trass-cement mortars.

ENGINEERING PLANT IN INSTITUTIONS

(Continued from page 70.)

Calorifiers or Hot-Water Heaters.

THESE are principally of two types. Each is built with a body to contain water, with steam tubes passing through it, but they differ in the respects that one type carries the water resulting from the condensed steam to a discharge outlet, while the other type discharges it into, and mixes it with, the water in the body of the calorifier.

In some circumstances water is heated by blowing in free steam, but this is such a noisy process that for ordinary purposes it cannot be tolerated.

Up to comparatively recent times it was quite a common practice to deliver hot condense water to the drain after leaving the heater, but it is now almost universally recognised that the utilisation of hot condense water as hot boiler feed means a great saving in fuel, and that condense water returning to the boiler at 180° Fahr. effects a fuel saving of no less than 11 per cent. in a boiler working at 80 lbs. pressure per square inch.

For the second type of calorifier it is claimed that the whole heat of the steam is made use of, and that the necessity for complications of steam traps and condense mains is avoided.

There is considerable room for development in the design of heaters, and from careful observation and experiment the writer has definitely arrived at the opinion that the rate of transmission of heat from steam to water is enormously increased by violent friction of the steam over the heating surfaces, no doubt caused by the scouring action of the steam in clearing away from the inner walls of the tube the film of condensation water, which forms by the cooling action of the water on the outside of the pipe. Water, although very efficient in removing heat by convection, is a poor conductor, and a light film between the tube surface and the steam retards heat transmission. The principle has been embodied in more than one calorifier with which the writer is familiar, but it is probably more by accident than design in at least one of those referred to. Among the most efficient heaters met with in the writer's experience is one in which the tubes are packed in closely coiled stacks, and in which the tubes double back upon themselves sharply, causing considerable friction.

Heaters are now usually fitted with a controlling arrangement for governing the flow of steam by means of the temperature. These thermostats, or temperature regulators, are of two principal types. Firstly, those in which the increase in length of the heater shell, due to increase of temperature, is made to shut the steam admission valve; and secondly, those in which the steam admission valve is opened and closed by the vaporisation by heat of a volatile liquid, enclosed inside an exhausted chamber, exposed to the water. This latter type of control valve is usually fixed upon the heater shell, but a more suitable position should be where

it can be operated by the water in the return pipe, as, after all, the return water is the true index of the temperature of any system of heating, and whether it be a heating apparatus or a hot-water supply plant the system cannot be efficient until the temperature of the returning water is normal, while it is easily possible for the temperature in the heater to rise locally and close the valve.

In this matter of temperature control low-pressure steam may be said to be self-governing in the steam supply, since the nearer the temperature of the water approaches that of the steam the less becomes the heat transmission, until, as the boiling point is approached, transmission practically ceases. It will, of course, be understood that in this connection, by the term low pressure is meant steam at $1\frac{1}{2}$ lbs. or 2 lbs. per square inch, and the writer has put in some very successful plants working with steam at this pressure.

The Kitchen.—In the matter of kitchen apparatus one institution is very like another, and only differs in the matter of the size and capacity of the plant, and also that for certain institutions special plant may be necessary.

In all kitchens steam boiling coppers, and steaming chests for potatoes and direct steam-cooked foods, are found. Steam-heated hot closets, with heated tops and roasting and baking ranges operated by coal (or more generally now by gas), are also essentials in the equipment of the modern institution kitchen. The special supplementary apparatus consists of beef-tea making boilers and cooking coppers for cooking gruel, and apparatus for milk sterilising in hospitals and infirmaries.

In the kitchen also it should be remembered that all clean condense water, from the jackets of boiling coppers and hot closets, should be saved, and turned into the main condense return pipe, to be re-evaporated in the boilers. But enthusiasts of economy should not let their zeal carry them to the lengths of saving the condense water from contact cookers, such as potato steamers, as the grease carried off by the steam is as likely to cause trouble as the grease from cylinder lubrication; yet the writer has many times seen this done.

Two of the problems connected with kitchen equipment are the prevention and the removal of vapour in the kitchen, and adequate ventilation by the removal of the heated air inseparable from cooking operations. With the first-named the design of the vapour-producing apparatus has much to do. Boiling coppers should for this reason have their covers, or lids, sealed against vapour by a water seal, and suitable provision should be made to carry off the vapour generated inside the copper while at work. Of course, the very simplest method of doing this is to carry a vapour pipe direct from the interior of the copper to the open air. This, however, has its disadvantages, as cooking odours are thus disseminated all round; instead of carrying up a multitude of vapour pipes several such pipes are often connected into a common collecting-pipe, and discharged to the atmosphere; but this may result in discharging the vapour from one boiler to another.

One of the best methods of dealing with this vapour is to carry it into a common pipe, which is placed in a trough of running water behind the coppers, condensing the vapour as fast as it is formed, the outlet of which is discharged to the drain.

The draw-off taps from boiling coppers should always be made so that they may be easily taken to pieces for cleaning, and a good practice is to fit them with a removable plug on the front, so that a wire may be passed right through.

It is a decided advantage to have boiling coppers provided with a metal scale on the inside graduated in gallons; this is much more convenient than measuring out the liquids, and saves much time.

Steaming chests call for some remark, and a glance at the principles of cooking in these may be of some interest. It is quite a common idea that the cooking is carried out in these steamers by pressure, but as this idea is a mischievous one it is worth notice here that the pressure has nothing more to do with the cooking than the fact that the temperature of the steam increases with the pressure. The operation in contact steam cooking is that the steam condenses in hot water upon the food being dealt with, and which is maintained automatically at a constant temperature, owing to the fact that the heat of condensation is practically constant at that of the steam.

For this reason the steam inlet of the steam cooking chest should always be made small in size, and the inlet valve of the seating type, so that the steam may be wiredrawn or throttled, so that no more steam is admitted than just requires to fill the chamber without pressure.

Pressure should never be bottled up in one of these steam cookers, owing to the large unstayed flat surfaces which they

invariably contain. A relief valve, weighted to lift at a few ounces per square inch, should be fixed to each compartment, and instead of the common steam trap the outlet should be formed in a water-sealed syphon, so that in the event of any pressure accumulating it may have a free blow-off to atmosphere. This discharge pipe should, as before remarked, be carried to the nearest drain.

Steam cooking chests should also be fitted with some arrangement which should render it impossible to open the door while steam is on. Many accidents may be prevented by this precaution.

Beef-tea making, milk sterilising and gruel making should not be carried out in steam-jacketed pans, the direct application of steam heat causing damage to its contents. The jackets of these apparatus are supplied with water through a small auxiliary feed cistern, supplied through a ball valve, and a steam coil of copper pipe is fixed in the water jacket to heat the water.

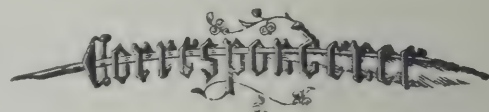
Hot closets and tables call for no very special comment, except perhaps to mention that where steam is not available it is quite possible to heat these by hot water from a hot-water service supply, and which is quite successful.

Tea-making machines are an equipment of most kitchens, and are of various designs. Some few are met with where the tea is brewed in a cast-iron boiler, but this is not to be recommended, as the action of the tea upon the iron causes a discoloration of the brew. In other types the tea is made in a tinned copper pot, and yet in others, and best of all, the brew is made in an earthenware receptacle. In every case the water is never taken direct from the ordinary hot-water service pipes, but is separately boiled in a cylinder fixed over the teapot specially for the purpose.

All gas-cooking apparatus, and other plant giving off cooking fumes and vapours, should be fixed under a metal hood, or vented to a flue. The hood, or canopy, is fitted with a vent pipe delivering into a flue fitted with a fan, which performs the twofold function of ventilating the kitchen and keeping it free from vapour. Central fire-cooking ranges are also provided for in the same manner, and the capacity of the fan should be such as to be capable of drawing off the air from the kitchen at least once every five minutes.

All jacketed pans should be lagged, as also all other apparatus, such as gas ovens, &c., to keep down the heat, which would otherwise make a kitchen intolerable.

(To be concluded.)



[The Editor will not be responsible for the opinions expressed by Correspondents.]

The Land Tax.

SIR,—All who have studied the reports of last night's debate in the House of Commons must now realise how greatly the real effect of the land taxes differs from the anticipations and theories put forward by their authors.

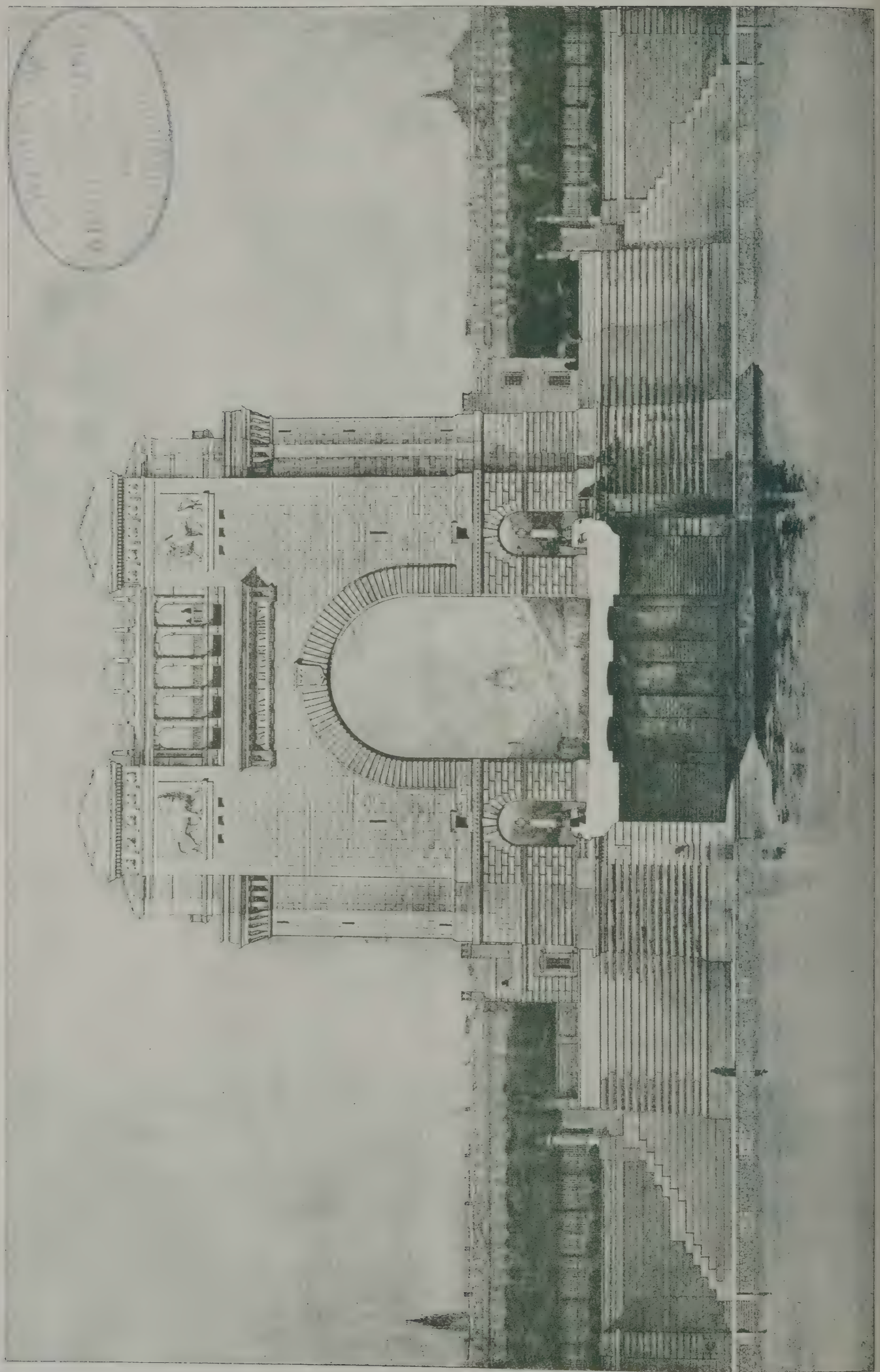
Concrete cases of loss and hardship were brought forward in this debate, but the only reply vouchsafed from the Government side was a repetition of the threadbare statements as to the rapacity of landowners, and the advocates of the single tax were conspicuous in pressing their demands for imposing yet further burdens upon all land, both agricultural and urban.

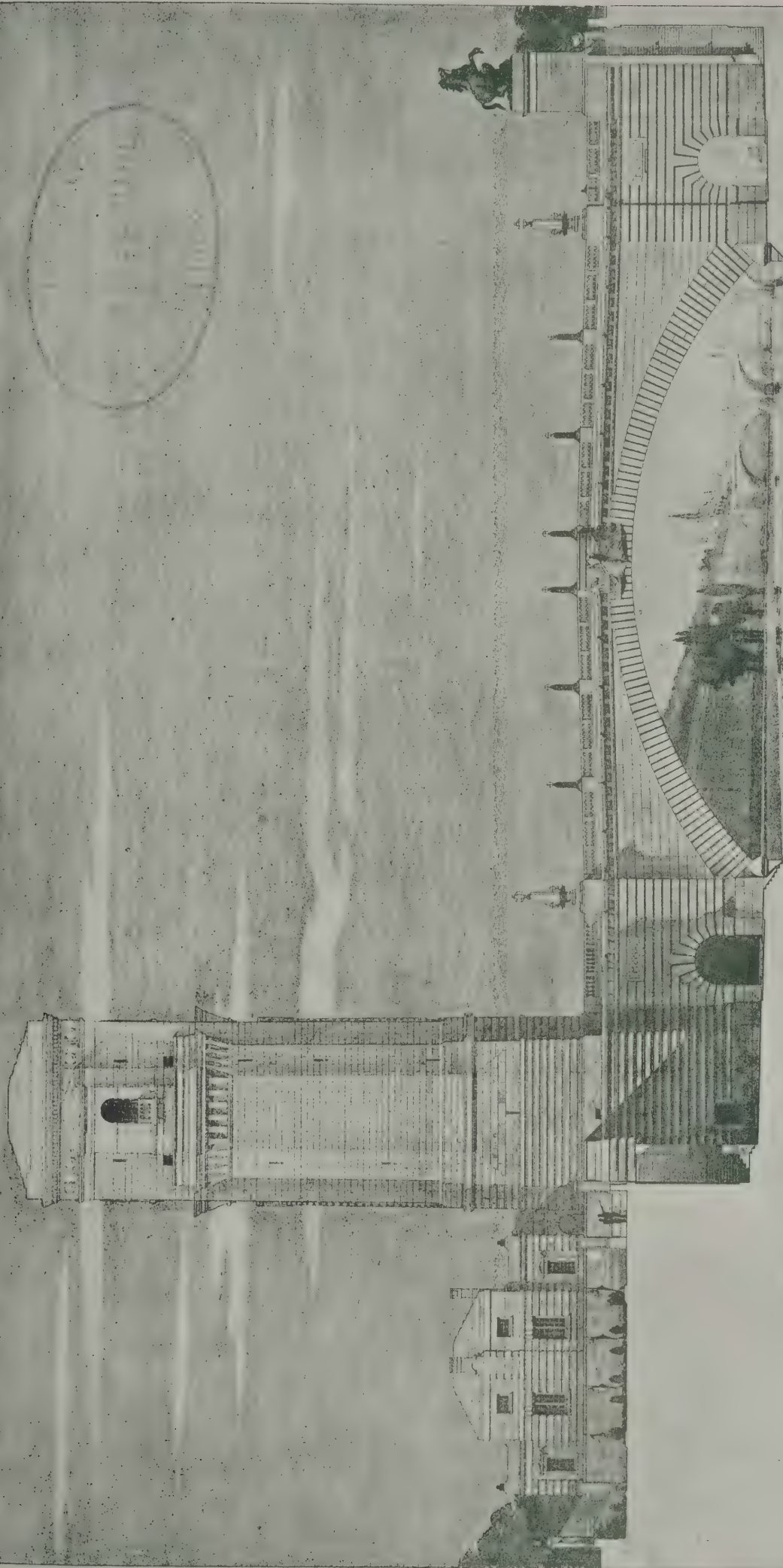
It is obvious that we are in a critical stage of a great struggle between the land-taxers and the Land Union. The former have the support of 143 Radical and Labour members, and have a minimum campaign fund of 5,000*l.* a year from Mr. Fels, the American millionaire. The Land Union has, as last night's debate shows, nothing to fear from the arguments of the land-taxers in the House of Commons, but it can only meet and defeat their propaganda in the country if it receives the financial support and active co-operation of all who sympathise with its objects.

May I appeal to all such to enrol themselves and send a donation or subscription to the Secretary, St. Stephen's House, Westminster?—I am, yours faithfully,

E. G. PRETYMAN.

2 Belgrave Square, S.W.
February 15, 1911.

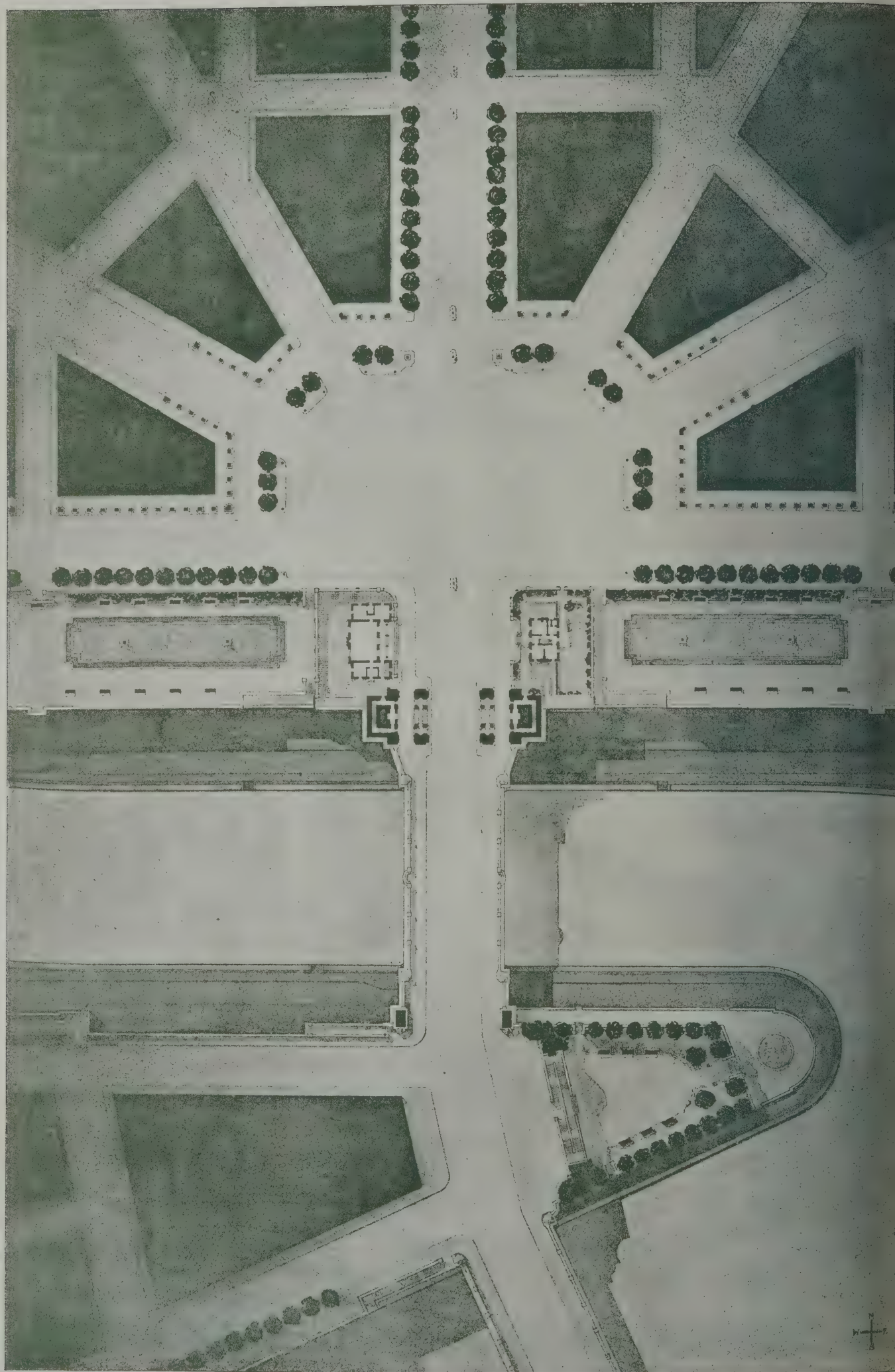




DESIGN SUBMITTED FOR THE SOANE MEDALLION, 1911: SIDE ELEVATION.

By Mr. J. NIXON HORSFIELD, A.R.I.B.A.

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INK PHOTO SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

DESIGN SUBMITTED FOR THE SOANE MEDALLION, 1911: BLOCK PLAN.

By MR. J. NIXON HORSFIELD, A.R.I.B.A.



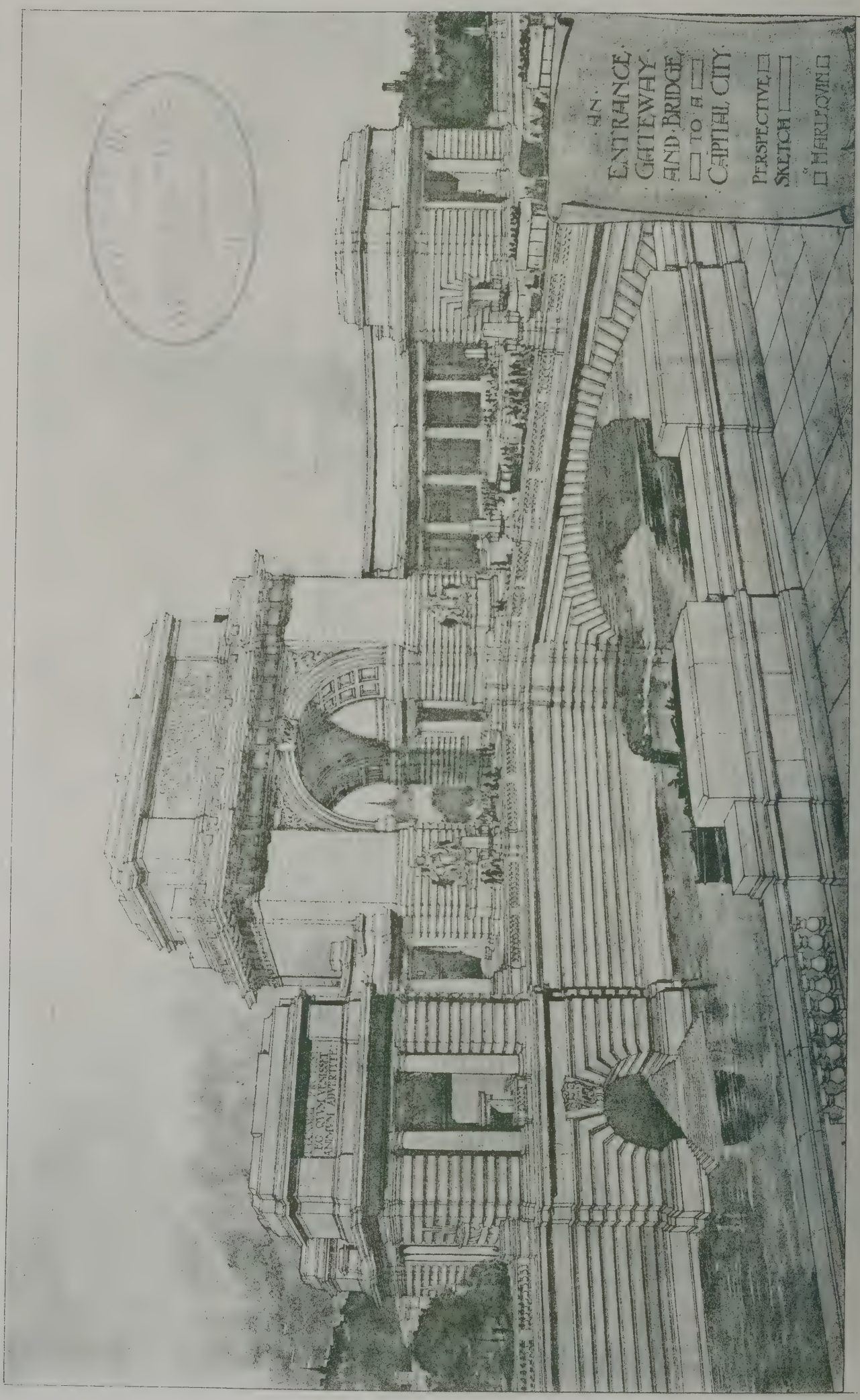
· SOANE · MEDALLION ·
· 1911 ·

· HORATIUS ·

DESIGN SUBMITTED FOR THE SOANE MEDALLION. 1911.

By Mr. A. D. STUART.

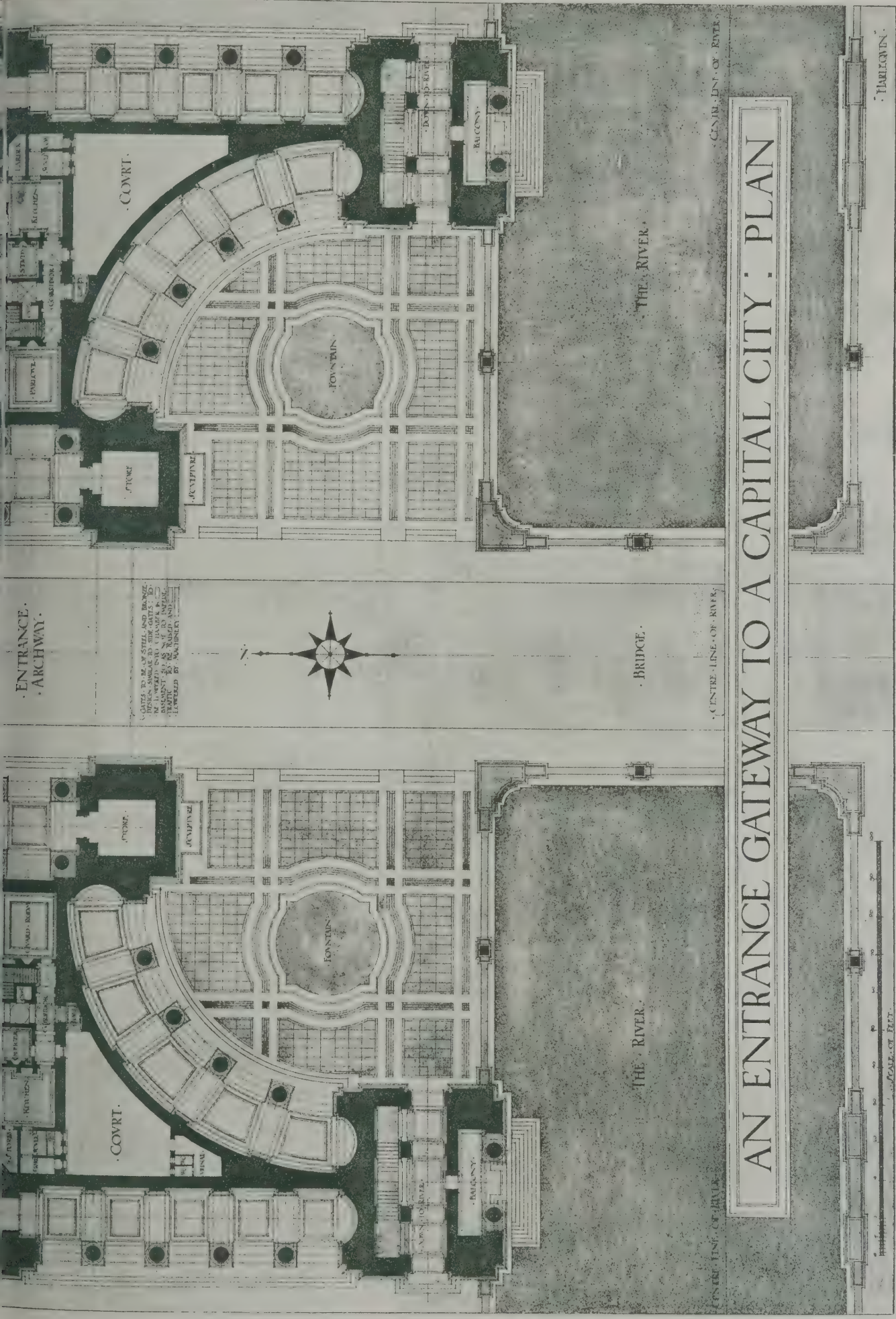
The Architect, Feb. 24th 1911.



ENTRANCE
GATEWAY
AND BRIDGE
TO H
CAPITAL CITY
PERSPECTIVE
SKETCH
HARRINGTON

· GYARD · HOUSE ·

· BRIDGE KEEPER'S HOUSE ·



DESIGN SUBMITTED FOR THE SOANE MEDALLION. 1911.

By MR. BERTRAM LISLE.

The Architect.

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FORTHCOMING EVENTS.

Saturday, March 4.

Architectural Association: Spring Visit to the Recruiting Station and Stables, Whitehall.
Edinburgh Architectural Association: Visit to (1) General Post Office, (2) New Galleries of the Royal Scottish Academy.

Monday, March 6.

Architectural Association: Mr. A. R. Jemmett on "The Functional Application of the Orders to Modern Buildings."
Liverpool Architectural Association: Paper by Mr. Ernest Newton, A.R.A.
Victoria and Albert Museum: Mr. Banister Fletcher on "German Romanesque Architecture." (University of London lectures.)

Tuesday, March 7.

British Museum: Mr. Banister Fletcher on "Early Christian Basilican Churches and Baptistries." (University of London lectures.)

Wednesday, March 8.

Northern Architectural Association: Announcement of Awards in the Glover Travelling Studentship and the Students' Prize Competitions.
Exhibition of R.I.B.A. Prize Drawings.
Carpenters' Company: Mr. Noel Heaton on "The Use of Glass in Building."
Manchester Society of Architects: Mr. J. H. Sellers on "The Architect's use of a Library."

Thursday, March 9.

Society of Architects: Mr. W. S. Frith on "The Relation of Sculpture and Carved Ornament to Architecture."
Carpenters' Company: Professor Beresford Pite on "St. Paul's and the Bridges."

COST OF SCHOOL BUILDINGS.

IN the provision of every class of building that is paid for by public money, and hence not subject to commercial restrictions of finance, there is a tendency to a constantly increasing ratio of expenditure, which is partly no doubt due to the fact that such buildings are apt to be urged forward in development and progress by experts. Baths, workhouses, hospitals, asylums, and other publicly provided institutions are the object of study and attention by architects, and their critics and advisers, medical or otherwise, who are continually seeking improvement. This frame of mind naturally leads to increase of cost, and a point is at some time reached in which it is felt that the expenditure is more than the State can afford in view of the ever-increasing number of directions in which social reform is being pressed forward. The public purse is no doubt deep and well-lined, but there is a limit to the burden-carrying capacity of even the British taxpayer. Old-age pensions and free meals for children may be excellent forms of public benevolence, but if millions of money are required for these purposes there must be economy in other directions, since at the present time the wealth of England is not increasing at a sufficiently rapid rate to permit of any large or indefinite expansion of political altruism.

Amongst the several classes of public buildings of which the cost has been advancing at a rapid rate are our schools. Hence the appointment of a Departmental Committee "To inquire and report—(a) Whether the cost of buildings for public elementary schools can properly, and with due regard to their suitability and durability, be reduced by the use of materials or methods of construction different from those ordinarily employed at present; and, if so (b) What steps should be taken to facilitate the adoption of such materials or methods, and whether any alteration of the law is required for the purpose."

The Report of this Committee has just been published and does not add much to the knowledge that most architects possess, particularly if they have had special experience in school building, when, to put the essence of the report in a nutshell, the Commissioners answer the first question in the affirmative and recommend on the second point of their reference that school buildings shall no longer be subservient to building acts and local by-laws.

In the course of their Report the Commissioners allude to the well-known facts that in the period immediately following the Elementary Education Act of 1870 it was found to be possible to provide schools in most localities at a cost of 5*l.* or 6*l.* per place, whilst the cost of a modern permanent school erected under favourable circumstances according to ordinary modern practice cannot be put much under 10*l.*, and a reasonable estimate for an ordinary

building designed with due regard to economy would range from that figure up to 13*l.* 10*s.* per head, according to the provision made for halls and instruction in domestic subjects and manual work.

The Commissioners recognise that a considerable portion of this increase of cost results from conditions that are not under the direct control of the local education authorities. It has, in fact, arisen from the requirements of the Board of Education (and its predecessor, the Education Department). The minimum eight square feet of floor area which was considered sufficient in 1870 has grown to ten feet. To this has been added a "central hall" followed by extra rooms for special subjects, laundry, cookery, manual training, and so on. Now, although not mentioned in the report, the "hall" is to be no longer "central," but following American and German practice a distinctly "insulated" feature, leading necessarily to an extension of corridors and additional expense. The requirements in respect of cloak rooms and sanitary adjuncts are to-day also considerably in advance of what sufficed in 1870.

It is really marvellous that in face of the constantly growing demands for additional space, those architects who have specialised and become experts in school construction have attained so high a skill in economical planning that the increase of cost from the 5*l.* or 6*l.* per place in 1870 to the 10*l.* or 13*l.* 10*s.* of to-day is no more than it is.

Criticism of the amount of accommodation required for teaching was beyond the scope of the reference to the Commissioners, and it is for educationists rather than for architects to say whether the requirements of the Board of Education are not considerably in advance of the minimum for reasonable efficiency, but we can confidently assert without fear of contradiction that it is the growth of these requirements that has brought about the increased cost of the public elementary schools of to-day as compared with those of the seventies in the last century and the presumed waste of public money on schools that has become a popular cry.

In view of the continually varying opinion of the Board of Education as to what constitutes proper provision and equipment for public elementary schools, there is a great deal of importance in one question to which the Commissioners gave some attention, the "useful life" of school buildings. If schools are to be regarded as out-of-date within a few years of their erection, and in consequence to require rebuilding or drastic alteration, we agree with the Commissioners that "The ingenuity of school architects may well be directed to find a satisfactory type of semi-permanent school building which shall be cheap to

erect, inexpensive to maintain, cool in summer, and warm and dry in winter." Quite so. If the Board of Education will instruct school architects that the most perfectly planned building they can devise to fulfil the requirements of to-day will be out-of-date in ten years' time, the architects can construct buildings whose durability will not be excessive. But to do this it is imperative that the architects shall not have their hands tied by the hard and fast regulations and restrictions of the Building Acts and by-laws which to-day render obligatory the construction of buildings of very considerable durability and consequently expense.

(To be continued.)

BRICKWORK.*

By MR. WALTER CAVE, F.R.I.B.A.

(Official Report.)

IN studying the use of any particular building material it is essential to trace its development, and to see how it has been used in the past, so that we may make up our minds as to how it can best serve our purposes to-day.

I know that there is an opinion held by some modern designers—that this study of the past cramps our ideas and tends to mere copying of ancient examples. I would answer them that all history is against them, that we have proof on every side of us that the old builders used the experience of others, and in this way art advanced steadily, eliminating what appeared to be useless, and each age in its turn added to the store of knowledge, and thus built up by degrees the great monuments which we now see, each generation improving and adding so as to suit their particular requirements, both consciously and unconsciously. In other words art must be alive and kept alive if it is to endure. But it is just as impossible to ignore the past as it is to avoid the present, and if we are to advance it seems to me necessary to thoroughly understand how the point has been reached from which we intend to start.

I do not propose to-night to give an historical lecture on brickwork, though the subject would be a fascinating one, at least to me, but I shall endeavour to place before you, by a series of examples, the possibilities of this material as it has been used and is being used to-day, and inevitably the work of hands long dead must enter into my explanations.

The late Mr. G. E. Street, in his valuable book on "Italian Brickwork," has little opinion of ancient brickwork in England, and even goes so far as to say that where we find it here after the fifteenth century "it is seldom remarkable either for any singular beauty or originality of treatment," and he adds that "in this matter we are obliged to go to the Continent for information." It must not be forgotten that these words were written more than fifty years ago, at the height of the Gothic revival, by a great and sincere man, whose sympathies, judging from his work, lay more on the Continent than in his native land. But I quote them for that very reason—for until comparatively recent years it has not been the fashion to study and appreciate the mediæval architecture of England, and especially the fine series of domestic buildings which have become familiar to us all through the medium of many splendid volumes.

The time at my disposal makes it necessary to keep my remarks within definite bounds, and for this reason, and influenced by the words of Mr. Street quoted above, I determined to confine my lecture mainly to English brickwork.

It must be remembered that bricks are in reality an artificial material as compared to stone, granite, marble, and wood. They can be moulded and shaped to our requirements, and herein lies the danger of their misuse. To attempt monumental work on a vast scale in brickwork seems nearly impossible; the smallness of the material is such a manifest incongruity to the necessary size of the parts, and its perishability is a fact not to be disregarded. Even the Romans, who used bricks on a scale unapproached by other nations before or since, could not overcome the difficulty—and we must all feel that the Baths of Diocletian might have still been a wonder of the world if the stones of Baalbec could have been quarried on the Campagna. The effect of material on the formation of a style is a subject familiar to all students of architecture. It is not difficult to appreciate the effect of the great limestone strata which runs through the West

country on the quiet, dignified, and absolutely appropriate architecture in the Cotswold Hills; the effect of the quarries of Carrara on the warm, mellow walls of the Baptistery and Cathedral at Pisa; or the effect of the great pine forests of the Baltic on the homely domestic buildings of the Scandinavian Peninsula. And in the same manner the clay fields of the Thames and the Po, or the great alluvial plains of the Low Countries, have each had their influence on the architecture of the locality.

Bricks as a building material have been used as a substitute for stone or marble from the earliest times. Where the harder building materials were obtainable we find brick rarely used, but since the introduction of railways and other forms of transport have made bricks cheaper than even the local stone, we now find that in all accessible places brick is the most economical material for building.

This has had a bad effect on architecture generally, and has gone a long way to destroy local traditions in building—the brick being used as a cheap substitute for stone walling, without knowledge of the material or any attempt to utilise its possibilities. Everybody knows the disastrous effect of red brick cottages introduced amongst the cool grey tones of the granite and rough-cast buildings in Scotland, which harmonise so well with the character of the Scotch people and their country. Very different is the result of the use of bricks in those districts where stone was unprocureable or too expensive for general use—such as Norfolk and Suffolk and the Low Countries across the North Sea. Here we find fine tradition of brick building lasting from the time of the Romans (as at Colchester) down to the present. Take as a typical instance the town of Bruges, in Belgium, where the brick gables in the narrow streets show an astonishing variety of treatment, and are an object-lesson of the right use of the material. As a rule the bricks are small, much smaller than our commercial brick of to-day, and the joints are wide; the moulded portions are kept in good proportion, and if these designs were translated into stone they would lose at least half their charm and meaning. Doubtless, a certain quality is due to age and decay, for there are few bricks which are pleasant in texture and harmonious in colour which do not very soon show the effects of the weather and atmosphere—but, as Lewis Day observes, "What then?" Beauty is beauty, and if it comes of decay (which we cannot hinder) let us at least enjoy the beauty of decay, and not give it over to the restorer.

If we follow the geographical position of all the great brick buildings we shall find them placed in the low lands, and mostly in the river basins. This is only natural, and the geological map will indicate that it is in these positions the great clay beds occur, from which, in England at any rate, the valuable brick earths are obtainable.

In dealing with architectural use of materials in England it is impossible to avoid reference to the effect of external influences. The situation of the British Islands at the extreme North-Western corner of Europe is of importance in consideration of this subject. The whole history of the development of art will show that the movement from the earliest times has been in our direction, and the result has been two-fold.

1. That (as Mr. Gotch put it in describing the early Renaissance architecture) "as the stream of the Renaissance flowed across Europe it became tinged with the peculiarities of the various lands over which it passed."

2. That we were always the last to receive, appreciate, and develop on our own lines any influence arising from the great movements in art which started in the East.

The first great influence we received was from the Italian workmen who were imported by Henry VIII., and the evidence of their work is seen at Hampton Court in the terra cotta medallions of the Emperors which were executed by Giovanni de Majano about 1520. It has been stated that there were Italian influences at work before the beginning of the fifteenth century on our eastern coast, as at Great Snoring and East Barsham. But without doubt this particular form of enrichment was due to Italian workmen, and we can see in the elaborate parapets at Sutton Place, Guildford, and Layer Marney, in Essex, the intricate Italian detail handled with a certainty and ease which is very different from the first crude attempts of our own builders to cope with the details of the Renaissance.

This elaborate Italian work never took root, and terra cotta as a building material, with a few isolated exceptions, ceased to exist at the end of the sixteenth century. I may here quote what Professor Blomfield says on the subject: "With good reason the sound taste of the English rejected it as harsh and discordant with the beautiful texture of their

* A lecture delivered at Carpenters' Hall on February 22. Fifth of the Series on "The Arts Connected with Building."

brickwork. The charm of the work at East Barsham is due to its disintegration; where it remains in its original state and unimpaired by the weather it is quite as unpleasantly hard as modern work. Moreover, as its manufacture must always be mechanical, no alteration could be made in it, no slip of the chisel could be converted into some happy fancy. Nothing more was heard of terra cotta in this country as a building material, until it was revived as a commercial speculation in the latter half of the last century."

Christopher Wren, and that master's work at Hampton Court probably owes its fine brickwork to the influences of his Royal client. The brickwork in the Eastern counties and the towns on the estuary of the Thames shows the strongest proof of the Dutch influence—as was only natural with a maritime nation.

During the great house building period of Elizabeth's reign the Dutch and German forms of the Renaissance were unfortunately pre-eminent, but in the matter of brickwork



MOYNES PARK, ESSEX.—From a Photograph by Mr. F. R. YERBURY.

As we have seen, the Italian influence on brickwork in England was mostly felt in the introduction of terra cotta ornament, executed by Italian workmen. This influence only lasted about forty years, and at the death of Henry VIII. the Italians disappear, their disappearance due in all probability to the religious disturbances of that time. During the reigns of Elizabeth and James I. we find a new influence at work connected with Germany and the Low Countries. There are many things to account for this new development,

there is little to regret. But English brickwork had its own fine individuality before these foreign introductions, and as an example of good taste and workmanship it is unsurpassed. Its mellow colour and bold wide jointing give a peculiar charm to this material, and though we gained something from the foreigner, our own brickwork emerges a thing of great beauty and refinement.

[The slides here shown by Mr. Cave included two of Bruges; the first being a typical scene showing various brick



GROOMBRIDGE PLACE, KENT.

From a Photograph in the Architectural Association Collection.

the similarity of religion, geographical position, maritime intercourse, and, above all, the bitter persecutions instigated by Philip II. against the Lowlanders and carried out relentlessly by the Duke of Alva, which drove thousands of the inhabitants of those flourishing States out of the country, and 150 years later, when William the Stadtholder accepted the throne of England, the influx of Dutch artists which followed brought renewed impetus to the movement, which can be seen in the fine brickwork executed in the time of Sir

designs, and the other the belfry as being a fine example of brickwork. Sutton Place, Guildford, shows the danger of the material—more especially in meaningless repetition. At Layer Marney there is a curious mixture of Italian and Gothic detail which is reminiscent of the churches of Italy. There is also an Italian feeling at East Barsham. Views were also given of Hampton Court and Great Snoring Rectory, Norfolk.]

Brick buildings may be divided into two classes:—

A. Those buildings where the walling alone is of brick, and the architectural features, such as doorways, string courses, window dressings, &c., are of stone. These are as a rule examples of the earlier buildings in England.

B. Those buildings where the architectural features as well as the walls were of brick or terra cotta. These are the true brick buildings, and represent the later architecture of England, with a few notable exceptions.

Mr. Cave then showed examples of each of these two types, describing some of the main features in each case. A strict chronological order is impossible, as there was necessarily a certain amount of overlapping.

Moynes Park in Essex dates from about 1580. Four bricks of the ordinary walling measure about $11\frac{1}{2}$ inches to the foot, and are a fine warm colour. The coping of the gables and garden walls is of brick. The great chimney stacks are good examples of what can be done with a bold simple treatment. The mortar joint, about $\frac{3}{4}$ inch, is flat and has weathered well in most places and is still sound. It is slightly set back from the face of the brick, and consequently there is a slight irregular shadow on each joint which gives a tone to the whole face. Stone, at all times a rare material in the Eastern Counties, is sparingly used. The north front has an unusual treatment in the alternate gables and bay windows. The entrance porch shows a pleasant proportion of stone to brick, and the effect of the jointing should be noted also. On the south wall are great chimney stacks which on plan are three shafts.

Another good example of these composite buildings is

breadth and dignity of Moynes or Cobham. A point to be noticed in these Tudor brick buildings is that those which have no stone quoins at the angles have a far better effect than those buildings in which they occur. For instance, Oxburgh and Buckden Towers, as there is no hard outlining produced by the stone quoins, have infinitely more breadth and repose than Burton Agnes, in Yorkshire, built about 1602.

Brecles Hall, Norfolk, is a typical moderate-sized East Anglian house, built of 2-inch bricks with a $\frac{3}{4}$ inch joint. The mullioned windows are composed of moulded bricks of the usual section of the sixteenth century. The heads and transoms have vertical joints. The interesting feature of this house lies in the fact that the window mullions, heads and jambs were covered with a thin coating of lime plaster to imitate stone. This method of treating brickwork is not uncommon in the Eastern Counties, where stone is scarce. This plaster is spread out over the jambs and finished in square patches to give the impression of stone quoins. There is a certain amount of Dutch feeling about the building, due to the treatment of the parapets of the forecourt wall; but on the whole the work is English in character. Kew Palace (1631) is a complete brick design. Great care was here given to classic detail, though it was all in rough brickwork.

The Pocock School at Rye is an interesting example of an early Renaissance brick building, depending on good proportion and proper use of material for its effect. It is a good instance of Italian forms with rough brick.

At Groombridge Place the general simple lines and



EAST BARSHAM MANOR HOUSE, NORFOLK.

From a Photograph in the Architectural Association Collection.

Cobham, in Kent. Here again we find a very pleasant proportion of brick and stone. The general effect is that of a brick house with stone introduced in just the right amount to give variety of colour and richness. The measurement of the bricks in this is $2\frac{1}{4}$ inch, and four of them rise to a height of $11\frac{1}{4}$ inch, which gives a joint of about $\frac{3}{4}$ inch. The absence of stone quoins is to be noticed. Instances of this type of buildings could be endlessly produced, but the character of the brickwork does not vary much. Other examples are Littlecote, Kentwell Hall, Eton College, Burton Agnes, Ragdale, and Brickden Towers.

The second type of brick buildings mentioned above are those in which stone is not used, or if used it is quite subordinate to the whole design. These are the true brick buildings. During the Tudor times we have several instances, such as Layer Marney (1520) and Sutton Place (1523), both of which show the early use of terra cotta and, as has been mentioned, have a strong Italian influence. But there is little in these buildings to differentiate them from the other Tudor buildings of the time, as far as the brickwork is concerned. The actual bricks and terra cotta are merely made to take the place of the stone and fulfil the same functions.

The great tower at Layer Marney is in many ways the most remarkable achievement in brickwork in the country, and is certainly a stately and imposing structure. Sutton Place strikes a different note, with its delicately modelled terra cotta mullions and parapets; but it seems to lack the

good proportion are conspicuous. The brick quoins and plain brick stacks likewise may be noted.

Other buildings noted were the Deanery Tower at Hadleigh, Suffolk; Oxburgh; Metford Hall; the Orangery at Kensington Palace; Blue Coat School, Westminster; and an eighteenth century house in the Close, Salisbury.

The later types of the purely brick buildings which occur in abundance from the time of Charles II. onward through the reign of Queen Anne and the Georgian Period show a use of the material which is quite distinctive. Quiet and dignified with their coloured brick quoins, shallow pilasters and moulded brick cornices, they show what can be done with good brick, simply and properly used. Out of so many good examples it is difficult to choose, but Kew Palace is fairly typical of this class of work.

Consider the detail of the brick walling itself. In this relation there are several points to be remembered—the size of the brick; its colour and weathering qualities; the bond or method of laying it; its pointing.

The size of the brick to be used is a matter of the greatest importance, and to some extent must depend on the scale of the building. Nowadays it is possible to obtain bricks of a much smaller measurement on the face than it was twenty years ago. Many architects have realised the beautiful effects which can be produced by the 2-inch bricks, and hence the demand has made the brickmakers give attention to their manufacture. In studying the old work one finds that the

Tudor bricks usually measured about 2 inches, but they were very irregular in shape. No doubt this fact adds largely to the charm of the walling. For most buildings the smaller brick gives scale, and if used with a wide joint takes off the crudity of the whole effect, which I think is a legitimate object to be aimed at, but the manufacture of an antique effect by combining bricks of all sizes with stones and flints,



BRUGES.—From a Photograph by Mr. F. R. YERBURY.

&c., in a haphazard way is, to say the least of it, a dangerous experiment, and open to criticism on the ground of affectation. Such good results, combined with solid, sane construction, can now be got with the bricks in the market that it is unnecessary to go out of one's way to imitate the chance effects produced by time and accident.

The weathering qualities of a brick depend on a great variety of conditions—the chemical properties of the earth, and their taking the atmosphere to which they are to be exposed. To enter fully into all these conditions would involve a disquisition on brick-making which is not within the scope of this lecture. To a certain extent we have to be guided by the experience of others in this matter, and in order that we may proceed without further delay I will imagine that we have selected a brick with due regard to its weathering capabilities. And then comes the all-important question of colour. If we are building in a brick district it is well to use the brick of the locality; it is far more likely to harmonise with the surrounding country, and happy is he who can bake his own bricks on the site. I know an instance where a large house was built in the country, when the house itself was faced with the deep crimson bricks from Fareham, a hundred miles away, and the smaller buildings on the estate were built with bricks burnt on the spot. The latter have within thirty years toned down into the landscape, whilst the house itself always has an exotic and unnatural appearance.

The colour and texture of the brick have also to be considered in relation to any stonework used in connection with it. As a rule the hand-made sand-faced bricks are preferable with most stones, and a variety of tones is most desirable. The dark vitrified headers and those bricks which vary in colour in themselves are most valuable, but unless especially instructed the builder will throw them out, as his idea is usually to produce as even an effect as possible. The very deep red bricks of some localities, such as those from Fareham just mentioned, are rarely successful away from their district. It will be found, I think, generally that a medium colour, well diversified in tones, will produce the best results.

Everyone knows the use made by the Tudor builders of the dark blue vitrified headers; curious irregular diapers were formed, which helped to give interest to the wall surfaces. Instances can be seen at Eton College and Hampton Court and Sandon Church, Essex, and Nether Hall. This method

of breaking up the wall surfaces may be picturesque enough in these old buildings, but I am not at all sure that the breadth and dignity of the wall does not suffer, and in modern buildings where this effect is aimed at I have often wished it had been omitted; the danger seems to lie in making the pattern too regular. I am very far from despising these particular bricks, as I think that they add very much to the general broken effect of colour, but I much prefer them as used in the eighteenth century introduced as headers in the Flemish bond, or even as on a house in Wallingford, where the whole facade is composed of these blue vitrified bricks, with red brick dressings to the windows and string courses.

Nowadays we have bricks of all colours at our command. Some are apparently only surface stains, which I do not think will stand the test of time, but many of these lilac and brown bricks are admirable in colour and quality, and if used with red bricks of the right shade, can produce as pleasant an effect as the old time-worn buildings of the past. It requires knowledge and judgment to select the right coloured bricks from amongst many samples laid before you. It is best to have a small piece of wall built up and see it from a distance in order to judge of the effect; bricks look so different in the mass and in the open air.

The bonding of brickwork is of considerable importance both from a practical and artistic point of view. Bond is the arrangement of bricks so as to prevent the vertical joints from falling into a continuous line, and to distribute the pressure over as large an area as possible. There are many varieties of bond, but the two most commonly in use are known as English and Flemish bond. English bond is laying the bricks in alternate courses of headers and stretchers, and Flemish bond is laying headers and stretchers alternately in the same course. Of the two the English bond is the strongest, as there is more tie through the wall on account of the greater number of headers.

Most of the Tudor buildings were built with English bond, such as Littlecote, Cobham, Moynes, Bramshill, Holland House, West Wood Park, &c., to name only a few. But by the end of the seventeenth century the Flemish bond is found in such houses as Chichely, Sudbury, Rutland Lodge, Peter-sham, and Groombridge, and the Orangery at Kensington. During the eighteenth century, when the use of the blue vitrified headers was a fashionable feature in the stately Queen Anne fronts, the Flemish bond was universally used to produce the diaper patterning which has been referred to



THE BELFRY, BRUGES.—From a Photograph by F. R. YERBURY

above. If the bricks which you are using have most of their broken colour confined to the ends, which is usually the case, then English bond is apt to produce horizontal lines, which is disturbing to the breadth of the whole, and the Flemish bond will give the best result.

Nowadays, when hollow walls are so much more in use,

with the outer skin of brickwork only four and a half inches thick, the question of general strength is somewhat altered, but the Flemish is the best in that case, as it does not necessitate so many half bricks, which are a source of weakness to the wall.

Of no less importance than the bricks themselves is the mortar and its pointing or treatment. The methods of treating the mortar are so numerous that it is impossible to mention them all. Every architect seems to have his own special method. Putting aside the hateful tuck pointing which is both inefficient and ugly, I will mention a few varieties. The common weather jointing is serviceable, and if properly done not ineffective, but in nine cases out of ten the bricklayer uses his trowel pointed downwards instead of upwards, which, instead of producing a weather joint, exposes the edge of the brick to all the actions of the weather and dirt. Then we may notice the flat joint, which leaves the mortar and brick absolutely flush; this is always satisfactory in appearance, especially when, as always should be the case, the work is done in the actual mortar used in building the wall before it is dry and as the brick is laid. But pointing in the usual meaning of the term in the bricklayer's mind is to rake out the joint either before or after it is dry and then fill in with a totally different composition, which, unless the whole is kept thoroughly wet, fails to adhere to the actual building mortar, and in course of time drops out. Of course this is necessary when repointing old work, but should not, in my opinion, ever be resorted to in new buildings. The danger of this flat pointing is that if the mortar is not cleaned off thoroughly from the face of the brick, and even a small amount is left projecting, the wet will run down the wall and lodge, and gradually working behind will penetrate and in time cause it to decay and fall off in frosty weather. There is, as I have mentioned before, a great tendency to-day not only to reduce the size



NETHER HALL.—From a Photograph by Mr. F. R. YERBURY.

of the brick itself, but to increase the width of the mortar joint; this can be carried to excess, and I have seen walls that look as if they were made entirely of mortar with a few bricks let in at intervals.

Of course everyone has his own predilections in a matter of this kind, but I think a good working proportion is $\frac{3}{4}$ inch joints and $1\frac{3}{4}$ or 2 inch bricks. Then we have the pressed-in joint, which is very weather proof; or even the joints raked clean out for a distance of $\frac{1}{2}$ inch (like the Church House, Westminster); but this lets in the weather and is ineffective if the bricks are even and machine made as in that instance. Both these last methods give a shadow at each joint which produces a tone over the whole surface of the building like a wash of grey colour, and softens the crudities of a new brick wall. An interesting method is sometimes seen of forming a moulded joint. This is done with a specially made

pointer like a stone mason uses for rough stone walls; it has a moulding worked on the face and is pressed well home, so that a series of small shadows is the result. This also gives a general tone to the whole surface; it requires an even and true brick. I found it for the first time on an old school building at Ottery St. Mary in Devonshire, which dated from the time of William and Mary, and may very likely be of Dutch origin.

It is a convenient point here to say a word about the mortar or cement in general use. Cement is the strongest material mixed with sand, but produces an unpleasant blue grey colour; it is also very liable to be attacked by frost; it has the advantage of setting rapidly. Then, as I have said, it is best to make the joint in the same material, using as light a sand as is procurable, and pressing the joint well home so as to prevent its being exposed more than necessary. A good lime mortar is, I think, the best of all, and produces a pleasant cream coloured joint if the sand is of a light tone, and in course of time sets as hard as cement and is not so brittle in the exposed parts.

The practice of colouring the mortar is bad, and I believe any foreign colouring material, such as lamp black or oxide of iron, must have an injurious effect in course of time. In districts where a good sharp sand is unprocurable except at great expense, sifted cinders are universally used for all mortar in its place, and this, I think, should, like the cement, be pressed well back in the joint out of sight.

[Slides here shown by Mr. Cave illustrated work at Sandon Church, Nether Hall, and Shelley Hall, Suffolk.]

There has been a great revival in the intelligent use of bricks during the present decade. A visit to the Garden City at Hampstead is worth anybody's time if they are interested in this subject. A noticeable feature is the ingenious way in which ordinary roofing tiles can be used in connection with bricks to give relief to a brick building. Arches, over-sailing courses, lintels, ventilators, &c., can all be formed of these, using the tiles as small bricks.

Amongst the many simple effects which can be produced in a brick building, the angle quoin is perhaps the most important. There are several varieties of brick quoins, as we shall see in the illustrations, but care should be taken in building them to preserve the continuity of the bond, or the angle becomes a weak point on account of the very feature which is intended to give it strength.

In brick architecture the strongest walls are those with the fewest ornamental breaks and projections, and great care is needed in designing pilasters, quoins, &c., to maintain the bond and not to interrupt the construction of the wall.

Great unbroken wall surfaces have a fine quality of breadth and dignity, when the brick is good in colour with properly struck joints. At Montreuil, near Boulogne, there is a great fortification standing on a hill overlooking the town; its walls and bastions of varied outline towering to immense heights are one of the most imposing sights I have ever seen. And the great brick forts on the Portsdown Hills which overlook the town of Portsmouth have a distinctive character and all the charm of a material which is properly used.

Bricks are now very largely used for fireplaces, not only for the linings and hearths, but for the whole mantelpiece, and in a certain type of house these can look very well; but I think there is just a possibility that this very fascinating material may be overdone and misused in the desire to produce new and original effects in interior decorations.

Amongst the many interesting details connected with brick buildings, the chimney stacks have always been treated with especial care, and in many cases with extreme elaboration. Bricks are eminently suitable for flues and stacks which have to stand considerable variations of heat and cold, and in many stone houses we find the stacks built of brick.

It is only possible to give a small idea of the great variety and ingenuity shown in these stacks. Sometimes we find the flues grouped into masses of solid brickwork with the shafts themselves merely indicated by V-shaped grooves. In others the flues are in detached circular and octagonal built shafts, highly enriched like those at Eton College and Hampton Court, but the caps are joined to tie the whole design together.

Some of the details of Elizabethan work would lead us to suppose that the builders of these great country houses were not really very careful designers, and this impression is intensified by the frequent misuse of the early Renaissance details which, as I have already pointed out, were often misunderstood and show signs of being taken from what were really German pattern books. But these

brick stacks are marvels of ingenuity in design, and are evidently the work of highly-intelligent craftsmen. Anyone who has taken the trouble to set out full size the twisted shaft for a chimney stack will know what I mean, and it must be remembered that these shafts must have been set out and the moulds made beforehand, for no mere rule of thumb or accidental effects could produce the results we see and admire.

A point to notice with all chimney stacks is the great importance of the amount of projection of the various members. It is impossible to lay down rules for this, conditions vary so greatly. I think in most cases failure is due to giving too great a projection to the over-sailing courses. One has to remember that the stack is generally an isolated object seen in silhouette against the sky, and from some distance below, and in a complex design the mitres and turns of the cornice or cap tended to exaggerate all the projecting parts. Here is a case for observation and measurement of good existing examples, to find out from actual facts how certain effects are produced. Opportunities are within reach of everyone who essays that which is, to my mind, one of the most difficult features to design successfully.

[Mr. Cave here showed slides of chimneys at Clifford's Hall, Hampton Court, and Horham Hall. Also of fireplaces by Mr. E. L. Lutyens at Danesfield, and finally of Westminster Cathedral.]

I should like to draw your attention to two modern London buildings which are both remarkable, though in an entirely different manner, for their use of brickwork.

All Saints, Margaret Street, is an example of the use of coloured brickwork, which for dignity and fine sense of proportion is difficult to equal. The late William Butterfield was a pioneer in the second half of the last century in the use of brickwork, and Keble College at Oxford will remain as a lasting memorial to his love of this material. Doubtless there are many who can see little in this College except the stripes and diapers of many colours and design, but those who can look beyond these effects—which I grant are not always satisfactory—must acknowledge a master hand in the general design and proportion. It has been said that if Keble College was whitewashed all over it would be magnificent.

I mention the Roman Catholic Cathedral at Westminster. The exterior is familiar to most of us, and shows an ingenuity of design which is characteristic of its designer. The late Mr. Bentley was an artist in the finest sense of the word, and his daring use of brickwork on a vast scale has given us the most remarkable London building of our generation. The illustration shows the great brick arches of the interior in their naked simplicity and dignity. It is, I understand, intended to cover them and the concrete vaults with mosaic and marble, so it is perhaps straining the point to allude to this interior brickwork as it now stands. But I think it will be acknowledged that as a mass it has great repose and is full of imagination, and is a fair answer to the statement that it is impossible to reach sublimity in brickwork.

To sum up the main points of this very interesting subject, we have seen from the illustrations of the fine old English brickwork that there was a great tradition not tied or fettered by any strict rules, but which bears its mark and individuality and gives us pleasure to-day, compared with the ordinary red brick wall of the suburban villa. Time and weather are no doubt largely responsible for these delightful effects in the old work, but the villa wall will never look right as long as it lasts, quite apart from the question of colour. The even machine-made bricks, with the narrow ill-struck joint, will damn it to the end.

This brings me back to the point where I started. Let us learn all we can from the masters in the past, who must have enjoyed their building and knew how to handle their material. Then let us start out on our own path, fortified with the beauty and charm which we find in their use of the material, and see if we cannot carry the great traditions one step further and leave behind us something that will give pleasure to the generations yet to come.

MANCHESTER SOCIETY OF ARCHITECTS.

At a meeting of the above Society, on February 23, Mr. Ronald P. Jones gave a lecture on "Sicily." The two great architectural epochs of Sicily, that of the Dorian civilisation of the fifth century B.C., and the Norman of the twelfth century A.D. were illustrated by excellent slides.

In the course of his remarks the lecturer said that architects are too apt to regard Greek architecture as a matter of modules and profiles, to study it in the adequate line

diagrams of the text book. Construction, materials and building methods are frequently ignored, and the buildings are generally studied in parts rather than as a whole. Consequently the variety of the actual work is seldom realised. We are too apt to gauge Greek architecture only by the Athenian masterpieces.

The Sicilian colonists represented specially adventurous and vigorous members of the mother community, and founded cities far more populous and magnificent than those of their birth.

The Temple of Segesta forms a good introduction to the study of Sicilian architecture. Its splendid isolation among the limestone hills, its restrained and reposeful style, provide an extraordinary instance of a weight of effect obtained by simple means. Here we find imposing scale and sombre magnificence, where all the refinements of detail are absent. It has come down to us as it left the hands of the builders, perfectly preserved, but still unfinished, for the building operations were rudely interrupted by invasion in 409 B.C. This being so, it forms one of the most lucid illustrations of Greek methods of building. The peristyle was built before the cella, and the flutes were added after the erection of the drums.

The rough local limestone, of which the Sicilian temples were built, was faced with a film of marble stucco, in which the mouldings and refinements were worked. This fine surface was polished and coloured. The Greeks had not the modern appreciation for the beauty of material in itself, just as they had not our love of natural landscape. To them, Pentelic marble was the best building material available, ensuring the highest possible finish. In Greece and Sicily the blaze of pure white marble is too dazzling, and the subtleties of form and light and shade cannot be appreciated unless the material is toned down with colour. The Greeks aimed at the highest possible finish, and looked upon joints as evils to be concealed by every possible means. Accordingly, in Sicily, by veneering the rough porous material, the difficulty of jointing was eliminated and a monolithic appearance obtained. In order to understand these Sicilian temples we must visualise their gay and decorative effect, their veritable blaze of colour, set among luxuriant groves.

The remains at Girgente are placed in surroundings less tragic and isolated than those of Segesta. One of the largest and most luxurious of the city-states of the ancient world, Girgente, with its population of 400,000 inhabitants, exceeded even Athens itself in scale and magnificence. The traveller approaching from the sea beheld a group of buildings of almost unparalleled splendour. Seven great temples crown a long narrow ridge of rock $1\frac{1}{2}$ miles in length and 300 feet above the plain. The Greeks took advantage of the natural site and did not level the rock, as the Romans would have done. The great building period was from 480 to 410 B.C. In the Temple of Concord we have one of the best preserved of Greek buildings, in that of Zeus the most colossal and one of the few failures, the scale being beyond the possibility of the style.

Slides were shown of Syracuse and Taormina with its unrivalled view, and the lecturer then passed on to Palermo and contrasted the internal magnificence of the mixed style of the twelfth century, as seen in the Capella Palatina and Monreale, with the external architecture of the earlier Greek civilisation. The beauty of these mosaics, with their wealth and colour and logical treatment, is unsurpassed.

Those who have not been to Sicily cannot realise its charm. To one who has been there, the name of Sicily has an attraction before which even Italy must take second place.

Messrs. Dunkerley, Healey, Corbett, Professor Capper, and the president, Mr. Percy Worthington, took part in the discussion which followed.

ROYAL ACADEMY LECTURES ON ARCHITECTURE.

THE second lecture by Mr. Reginald Blomfield, A.R.A., in his course of four, was delivered at the Royal Academy on Thursday, February 23. It dealt with "French architecture of the sixteenth century."

Henri III., the last of the Valois, was assassinated in 1589, and the sixteenth century went out in France under conditions of desperate confusion and political stress. The last quarter of the century had, said Mr. Blomfield, been almost a blank in architecture. Then set in a period of slackness, in which the brilliant traditions of the third quarter of the sixteenth century were lost. In fact, what may be called the second lap of the neo-Classical manner in France

was closed by the death of Henri III. The first period, which opened with the arrival of the Italian artists early in the sixteenth century, ended to all intents and purposes with the death of Francois I. That king, in spite of all his appreciation for the arts, left things rather worse off than he found them. His was the age of the amateurs, and of the unchecked development of "bric-à-brac" art. With some inconsiderable exceptions it is impossible to trace any marked advance in house-planning in the first forty years of the sixteenth century. Two types of plan were in use; the courtyard plan and the plan "tout en masse," as Du Cerceau calls it, that is a block plan with a corridor down the centre. The first was the direct descendant of the enclosed fortress plan of the Middle Ages, the only development being that this was in certain cases regularised and rectangulated. As to the block plan, though modifications were introduced here and there, this form had been used in the fifteenth century. Of course most of the important building work consisted of large extensions and remodellings of older buildings. The chief effort of the designers was devoted less to the composition of the building as a whole than to its ornament. In this latter regard there was a distinct falling off at the end of the reign of Francois I. from the standard introduced by the Italians. From the first these skilful artists had been regarded with jealousy by the native workmen, and as the king's political embarrassments increased he was less able to protect the foreigners. French workmen took their place, and the first Italian tradition of pure ornament faded away.

With the accession of Henri II. begins the second chapter of the Renaissance in France. The King himself, fortunately for French architecture, cared nothing for building; but his mistress, Diane de Poitiers, cared a great deal. She made it a fashionable hobby, and there can be little doubt domestic architecture gained in the process. Moreover the King's personal indifference was the opportunity for his officials, and most especially for Philibert De l'Orme, the architect and surveyor of the Royal buildings. He at once made short work of the building contractors who had robbed the late King right and left and built detestably. He taught them, for good or bad, that a new era had set in, that their business was to take their orders from the trained architect and carry out his designs in an honest and tradesman-like fashion. The Guilds had also proved their corruptness by their incessant selfishness and rapacity. Moreover, the Renaissance meant the emancipation, even the assertion, of the individual paramount. A new class of men had just arisen in France, men who devoted themselves to the study of ancient architecture in order to be qualified to substitute for the crude efforts of the master-builders some more authentic version of neo-Classic. De l'Orme and Jean Bullant were studying the antiquities of Rome on the spot and, more important still, were getting into touch with the humanists of Rome.

The result when such men returned to France was very different from the rudimentary notions of Renaissance architecture which prevailed at the court of Francois I. De l'Orme's first design for St. Maur is a remarkable illustration of the advance in architectural sense. There is thus a definite separation between the Francois I. period and that which succeeded it and which closed with the death of Henri III. The advance made is considerable. In the first place the architect had firmly established his status as an artist in building, and, in the case of the King's architect, he was an high official. The conditions of practice were not far removed from those of the present day. The scope of the architect's work was defined for the first time, and his training became more thorough and systematic. However, neo-Classic was still immature in France, and not quite certain of its direction. Brilliant individual artists had each worked on their own, and so far they had not succeeded in forming a school or a permanent tradition. It took another three generations to build up a uniform standard and tradition of architecture.

Before the middle of the sixteenth century the irregular plan of the older houses had been reduced to ordered symmetry. In regard to internal arrangements the single thickness plan, that is, suites of rooms with a corridor on one side only remained the common practice, but the newel staircase was going out of fashion, greatly quickened when De l'Orme introduced his oval staircase at the Tuileries. Very large gardens were coming into fashion. French architects were, in fact, feeling their way to a national style, a manner which, though it started in Italy, became in the following century purely French.

The technical advance shown in elevations, that is in the realisation of plans, was more marked than in the art of planning itself. The motives of early Renaissance archi-

tecture in France were very limited and were lacking in breadth. Their whole idea was to break up the wall surface into strips and panels for the surface ornament. It was to the task of correcting these faults that the new men addressed themselves with enthusiasm. Perhaps not one of them had caught "the true Roman manner." They hardly realised the value of plain wall surfaces, or of the relations of great masses of buildings as essential elements of architectural design. But they greatly enlarged the vocabulary of architecture. The elements of future developments are to be found, not only in this real advance in technique, but in the fusion of the arts, the adjustment of relations which made it possible for the painter, the sculptor, and the architect to work successfully together. In the catastrophe of the civil wars the arts fell back again; but the labours of Goujon and De l'Orme and his contemporaries were not wholly in vain, and when order was re-established in France the tradition was resumed and the development of French architecture proceeded steadily on the lines laid down by these pioneers.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.

A GENERAL meeting of the Society was held on Thursday, February 23, Mr. Sydney D. Kitson presiding. Mr. Harold Henderson, of York, read a paper on "Some Minor Domestic Architecture in Yorkshire." Confining his remarks to an analysis of the composition and detail of the buildings of the Dalesmen, Mr. Henderson said that these Yorkshire homesteads bore probably to a greater extent than in any other district in England, the impress of the individual, the strenuous and unbending character of a race who lived in a generation of fierce and strict Puritanism. The houses were sturdy and strong, standing four square to the weather, perhaps in some cases grim and stern, testifying to the reserve of their owners in high unbroken walls, yet displaying nevertheless in occasional grotesque or quaint finial a dry wit as a tonic and saving grace.

The great majority of the houses were of the seventeenth century, owing to the great number of gentry who lived on the produce of the land at that time.

The characteristic features peculiar to these Yorkshire buildings were dealt with in detail in the description of a typical house with single span roof, an occasional gable ornamented by finials, a projecting porch with quaint doorway, and fully illustrated by a series of studies and sketches, by Mr. Henderson.

At the close a hearty vote of thanks was proposed by Mr. C. B. Howdill, A.R.I.B.A., and seconded by Mr. R. W. Thorp, A.R.I.B.A. Briefly responding, Mr. Henderson urged the closer study of the type of building of which he had spoken, to the end of reviving the Yorkshire domestic traditional influence, now unfortunately almost extinct.

The next meeting will be held on Thursday, March 9, when Mr. W. H. Ward, A.R.I.B.A., will read a paper on "French Renaissance Church Architecture during the sixteenth century."

ILLUSTRATIONS.

CROOKSBURY HURST, NEAR FARNHAM.

THIS house stands high in a pine wood under Crooksbury Hill, and was built for Mr. W. H. Woodward, from the designs of Professor F. M. Simpson, F.R.I.B.A. The ground falls rapidly to the south and west, necessitating different levels for floors. Symmetry, however, has been obtained in the plan, and the main cornice outside is continuous. The principal room is the library. A feature is the outside loggia, approached from the drawing room by a corridor. The billiard room is not yet built. The builders were Messrs. Tompsett & Co., of Farnham. The bricks and tiles were supplied by Messrs. Thos. Lawrence & Sons, Bracknell, Berks.

WESLEYAN CHURCH, MELLISH ROAD, WALSALL.

THIS church was recently erected at a cost of 4,000l. The seating capacity is 400, thus making the cost 10l. per sitting. The whole of the work is excellently finished, the joinery is executed in oak, and the church is built with stone from the Weldon quarries. The roof is covered with Westmoreland green slates. The builders were Messrs. Streather & Hill, of Four Oaks, Warwickshire, and the architects Messrs. J. H. Hickton & H. E. Farmer, F.F.R.I.B.A., of Walsall and Birmingham.

OXFORD COLLEGE SERIES.—CHRIST CHURCH.

CONTINUING our series of views of Christ Church College, we this week give illustrations of the Staircase and Tom Tower.

THAT BRICK IS EMINENTLY SUITABLE FOR LARGE TOWN BUILDINGS.*

(Concluded from last week.)

YOU will remember that I wished to consider the brick under two aspects, its primary and its secondary qualities. Let us take the primary qualities first, and deal with the brick in what I have called its passive voice, its power of resisting outside attack.

"Architecture aims at eternity," writes Sir Christopher Wren; and if this is so, the primary qualities of the material are important. It may, of course, be objected that the essence of a modern town is its fluidity, the ebb and flow which leaves the riverside mansion of one generation among the factories and warehouses of the next, as in Bermondsey. But the rise of definite schemes of town planning will to some extent obviate this, and in any case we can hardly hope for a worthy town architecture if we deprive the architect of the incentive of futurity and deliberately expect our banks and schools, our fire-stations and town halls, to moulder away in half a century.

We have, then, from the point of view of permanence, to compare brick with other materials. And here I should feel justified, on the authority of Palladio and Mr. Blomfield, in considering terra-cotta as brick. "Stones are either natural," says the former, "or artificially made by the art of man. The stones artificially made are commonly called bricks." Moreover, terra-cotta has the alumina, silica, lime, and magnesia which are characteristic of brick, and in much the same proportions.

We have, then, to compare the weathering properties of these artificial stones with the three other available materials, stone, concrete, and steel.

Of these, exposed concrete would not withstand the action of frost, and exposed steelwork would have to be protected from the weather. And both these materials conduct noise and changes of temperature too easily to be by themselves a good material for town building. We seem to be reduced in any case to a comparison of the merits of brick and stone.

Building stone is of three main classes—the igneous stone (such as granite), sandstone, and limestone; the agencies of disintegration are, broadly, two, chemical and mechanical. For the following summary of the agencies attacking building stones in towns I am indebted to Mr. Allen Howe's recently-published "Geology of Building Stones."

Chemical Agencies.—Ordinary rain-water, owing to the presence of carbon dioxide, can affect the felspar of granite and the calcium of limestones. Of itself this action is slight, amounting to less than a millimetre in a century. But when rain falls through air which is loaded daily with 980,000 lb. of sulphur it is as if we were to syringe our buildings with sulphuric acid. Snow carries a higher percentage of injurious substances than rain-water. And the unburnt carbon particles from our coal fires act again as distributing agents of corrosive acids.

Mechanical Agencies.—Among these must be numbered organic deposits, either decaying organic matter in the form of blown dust or living organisms, lichens, and so forth.

Wind and friction are two other mechanical agents; but the most important is change of temperature. This particularly attacks the crystalline stones. In typical desert regions the crackling of rocks in the cold nights which follow the hot days is a familiar sound. The tendency of large towns is to lessen extremes of heat and cold; but we have not yet banished frost. And the expansive power of water freezing in a confined space amounts to a pressure of 138 tons per square foot.

How do the various building stones stand these agents of destruction?

1. **Limestone.**—The bed of rock which lies in a great bow across England from the Humber to Portland Bill is the cradle of most of our great public buildings. From a chemical point of view all building limestones are identical. Their content of carbonate of lime should be so high that almost all other substances may be regarded as impurities. And it is the carbonate of lime which decays under atmospheric acid; while the more crystalline limestones cannot withstand frost.

2. **Sandstones.**—Sandstones are attacked in the cementing matrix, which is either of a clay or a lime nature. And another disadvantage of sandstone is its uncertainty. Corsehill stone, for example, may be seen perfectly preserved in many cities, yet there are many instances where small balusters have decayed, and where it has been used on end as a facing it has scaled badly.

3. **Igneous Rocks.**—These, if fresh, are hardly liable to chemical decay. But they yield readily to the mechanical action of frost. Cleopatra's Needle, which could keep the sharpness of its inscriptions for 2,000 years in Egypt, has had to be treated with preservatives.

All around us is decay. By a curious irony the walls of St. Paul's, which were built out of a coal-tax, are now in their turn paying toll of their substance to coal smoke. London is mouldering away. And not London alone. The Clarendon Buildings at Oxford and the St. Aldate's face of Christ Church have been rebuilt in the last four years. And the air of Manchester contains twice as much acid as that of London. Nor is the disintegration solely due to coal smoke. Sir C. Wren tells us that even in his day the walls of Westminster Abbey were taking water, "which being frozen scales off." There is perhaps now not a stone of the Abbey which is as old as the day it was built. And you cannot rebuild a masterpiece, even piece by piece, without making the whole hard and self-conscious.

And yet there is to our hand a material which can be made impervious to frost and to atmosphere. "The earth about London," Wren says in a letter to a friend who was on Queen Anne's Commission for the Building of Fifty New London Churches—"the earth about London, rightly managed, will yield as good a brick as were the Roman bricks, and will endure in our air beyond any stone our island affords."

But endurance is not all we are looking for; though we had to our hand the adamant of Hades, we should not unhesitatingly build our towns with it. We have been examining the body; you will not feel that I have tackled this subject adequately unless we also examine the soul. And this is certainly the essence of the matter: how far does material affect the building's appeal to the heart? And what qualities are peculiar to brick or to stone?

I only wish that I were more equipped for dealing with so interesting and vital a matter. I must hope that the discussion will throw more light on it.

The question before us is how far brick is a suitable material for large town buildings. And we have seen that this practically resolves itself into a question, so far as surface matter is concerned, between brick and stone. The use of concrete or of steel exposed is not general enough to warrant serious examination, though I may perhaps in passing quote from Mr. Fergusson's "History of Modern Architecture" the passage where he is discussing the newly-built Crystal Palace. "Though stone," he says, "may be inappropriate, brick and terra-cotta may be employed with iron and glass with the very best effect. When so used the brickwork must be of the very best quality, so as to be pleasing in itself. Coloured bricks should be employed everywhere to give relief and lightness."

It is, then, a question between brick and stone. Let us take a brief survey of stone as a material of design.

There are two ways to build with stone. The one is to build with small stones, as did the mediæval builders; the other is to build with the largest stones we can get, as did the Mediterranean civilisations, whose heirs we are. Of these, the former almost merges into brickwork; indeed, many of the Gothic revivalists acknowledged this by their work, as may be seen in a walk round the London churches built by Street, Pearson, or Butterfield. At the same time, such mediæval work has the essential difference of carved ornament where stone must be used. The ornament of brickwork is either moulded or a patterned arrangement of bricks. This, I think, is essentially so. The fourteenth century innocence which chisels the brick niches of Beverley Bar, no less than the delicate Renaissance skill which carves the Cupids' heads in the rubbed brickwork of the Enfield House (now in the Victoria and Albert Museum), emphasises the truth that carving should be on stone. I am inclined to think that this mediæval method of building with small stones is the only logical method to-day.

But, certainly, it is not the method we have chosen. We rather go for our architectural forms to those dead civilisations whose resources and whose ideals were so different from ours, to Athens, who could quarry her temples from Pentelcus, or to Rome, whose building materials were the spoils of a world. Bramante can find cornice stones (a little small, it is true) for his portico at St. Peter's, with its 9-feet diameter columns. Wren is long delayed for the cornice to his order, which is less than half the size. And, as a result, we use a form of building where the whole system of the proportions is based on the size of the stone for cornice and lintel, while we vitiate that form by stringing small stones across the lintel, or building up our columns of discs, like so many draughtsmen, as in the Madeleine at Paris.

* A paper read at the last meeting of the Architectural Association.

But there are many to whom the abstract logic of design will not appeal. To them I would suggest that our use of Roman and Greek mouldings is hardly defensible. We use shapes that were designed to give an effect of glowing depth or stark delicacy under a searching sun; and we deliver them over to our weather, to wash them unevenly with its rain, to scour them unevenly with its south-west wind, to paint them unevenly with the velvet black of its carbon. If we are going to build in stone, ought we not to take account of all this, to arrange our angles and to design our mouldings so that the rain and wind may burnish those parts which we want white, and the smoke paint here and there a darkness which no Greek temple could attain? This would ask an amount of logical thought and experimental study, and perhaps the result would be theatrical. At least it would only be suited to something monumental, some great tomb or bridge or gateway.

But we live in an equable and kindly, rather than a monumental age. What are the large buildings we build in towns? Not a Pantheon, rarely a cathedral; even Newgate Prison is gone. For us, large town buildings are offices and banks, flats and elementary schools, theatres and fire-stations, town halls and public libraries. It is the immensity of our towns that is monumental. No one can have looked down unmoved upon Birmingham from the G.W.R. embankment. And I feel strongly that the note we have to strike is not a note of art and grandeur. We live in our great modern cities as our ancestors lived in the great forests. I think you cannot walk down Tooley Street or look over the endless roofs of Tottenham without feeling rather frightened. Our cities are great. Cannot we make them less terrible? There is a gracious homeliness about brickwork—what Charles Lamb calls “a cheerful, liberal look.” We feel it in the Temple, in Gray’s Inn, in Westminster. For my part I should be less frightened of calling on the King in St. James’s than in Buckingham Palace. Who does not long more than ever now to be a fireman, to live in those pleasant brick fire-stations? St. Benet’s, in Threadneedle Street, would stay my Sunday morning steps rather than St. Mary-le-Bow.

For our theatres and palaces of commerce we may use glazed bricks, beautiful as a De Morgan tile, and imperishable; probity is to be found in small things, and I would distrust a firm that hangs a porphyry lintel to a rolled steel joist. We may use salted bricks, or rubbed bricks, which laugh at acids; we may fill our palette with red from Fareham, with blue from Staffordshire, with white from Suffolk, or with the rose and purple of the weathered London stock. Texture, no less than colour, is ours. With glazed bricks and rubbed bricks, with recessed joints and lime cream, and with all the varieties of bond, what may a clever man not achieve?

It is then on these grounds that I base the claim of brickwork in town building. Historically we see that the great building ages have not disdained it; that, moreover, it is essentially an English material in that it was being used most surely and most vividly just when the English genius, cut off from Italy, France, and Spain, was most surely itself. Chemically, we see that we can by processes of manufacture, by selection of material, by careful burning, perhaps by glazing, produce something more enduring than Nature gives us. Most important of all, brickwork, in the hand of a master, may have a serenity and a kindliness which our great towns so conspicuously lack. We are building for the future; but we still have our roots in the past.

Mr. Wells prophesies that we shall live as intellectual insects amid an intricacy of glass and steel. On a large view I wonder how far it is sound for man to project such a shadow of himself on the screen of the future. I believe the man of the thirtieth century will have less in common with this anæmic abstraction than he has with Dickens or Herodotus; that he would rather walk with Charles Lamb to the Old South Sea House or the Temple than aviate with Mr. Wells amid the colossal perfection of some newer New York.

Mr. ALAN SNOW opened the discussion as follows:—Mr. Newton very modestly disclaimed expert knowledge upon the subject of brickwork, and then proceeded to show us what a lot he really knew about it. If he is not an expert, certainly I cannot be, and I imagine the reason for my opening the debate to be that, having myself proposed the subject, it was thought probable that I had strong opinions upon it. My suggestion contained one slight difference; I said eminently unsuitable.

Before seeing Mr. Newton’s paper I had written that to really approach a settlement we require to bear in mind (1) the nature of large town buildings and their necessary architectural character, and (2) the qualities, defects, and limitations of brickwork. These are much the same as Mr. Newton’s two premises, but there is this difference: it seems that he

would determine the material and then his effects, whilst I argue that the opposite course is here the proper one.

He himself half acknowledges that brick is not eminently suitable when he says he is inclined to think building with small stones is the only logical method to-day. If we ignore ferro-concrete—which I am not agreed we can do—I think he is right, and certainly agree with him that our use of Greek and Roman mouldings is hardly defensible. It is not defensible if they really are Greek and Roman, but I do not see why we should not be able to adapt the ideas which these mouldings clothed, and I do not see any argument here for the use of brickwork. To quote him again, he says: “It is the immensity of our towns that is monumental. Our cities are great. Cannot we make them less terrible?” Well, I think we could, if we did not use so much brickwork. I do not see how immensity and the gracious homeliness to which he refers can go together. Huge cities are huge mistakes, but we must now accept them as necessary evils, and do our best with them.

The architectural world is now practically agreed that geometrical planning is desirable in large towns. This, with its angles, long lines and curves, requires geometrical elevations, depending for their effect upon continuous horizontal lines, such as string-courses, cornices, &c., perhaps varied, but to a very limited extent, by gables, or a small group of vertical lines. This cannot be so well done in brick that it cannot be better done in stone or some other material.

It is not possible in brickwork to ensure that these lines shall be strongly enough marked, sharply enough defined; they lose themselves too soon in the distance. Neither is it possible to give to the projections the boldness, and to the enrichments the clear cut expression that is necessary for the attainment of true dignity and beauty.

Who will dare assert that the intended purpose and effect of a cornice or string course is as well realised in brick as in stone? Does anyone really hope to obtain the beautiful effects of a long length of curved moulding when he must construct even its simple curve in two or three horizontal divisions, or else make it so small as to be without effect? Are such shapes, indeed, natural to brick at all? If we adopt it as our material, are we not, at the very beginning of our building, confessing that it is unsuitable by embellishing it with forms evolved in another and larger material? The small unit it is that wars against the desired effect of mass and dignity; it is out of scale, and is only successfully used in subordinate positions; in buildings where the principal lines and effects are due to the use of stonework or some other material.

Suppose, then, we do without these foreign forms. Suppose we build our town building six or seven storeys high and several hundred feet long, entirely and naturally of brick. What is it going to look like? What is going to happen to it? Perhaps we may rely on texture and beautiful colour. Warmth of colour and variety of texture are the distinctive qualities of good brickwork, but these same qualities, which are amongst the chief reasons for the revival of brickbuilding in our country work cannot be relied upon in our large towns. The brick is either a hard and repellent material or its surface makes of it a natural collector of soot and dust, which are inevitably present in all large towns, and which adhere to the brickwork and in time become ingrained in it, and our once beautiful piece of colour becomes dull and of a drab monotony. Myself, I have never noticed the rose and purple of the weathered London stock that Mr. Newton mentions.

Also, these effects of colour and texture are ones that can be only appreciated when within the natural range of the eye. The old brick buildings of which we are so fond are seldom more than three storeys high. The chambers of Gray’s Inn and the Temple cannot be likened to the modern block of flats or offices. Who will say that these huge blocks of brickwork give the same pleasure as the earlier ones, even though treated in precisely the same manner and with as good materials? Perhaps we may go further than to simply rely on colour and texture, and aim at obtaining effect by pilaster or panel treatment, but can one finish this at the top in a satisfactory manner? And what is one really aiming at? Effects of line, obtained by shadows cast by one plane upon another, and here, just as with the horizontal lines, the material will prevent one from really gaining one’s end. One cannot get the lines sufficiently defined owing to the joints, and, worse still, the shadows are dulled and spoilt. Here we come up against one of the chief objections to the use of bricks in towns. The dull surface to which they so rapidly attain is incapable of reflecting light, and, indeed, may be said to absorb it. No brick building could ever sparkle as does the spire of St. Martin’s-in-the-Fields, seen

from the bottom of Whitehall. Our towns, being the dull places they are, and our streets of lofty buildings excluding all the light they do, this is a very serious defect.

If I were to ask you to imagine St. Paul's Cathedral or the British Museum in brick, you would think, perhaps, I was rather stretching the point, but why should you? If brick is unsuitable for these, is it any more suitable for the far longer and less broken frontages of our streets, where we cannot get relief by recessing portions and the provision of cornices, pediments, &c.?

Call to mind some of our streets of brick, and say if you admire them. Think of Victoria Street, Harley Street, Tottenham Court Road, and innumerable streets in Bloomsbury and Kensington, but collectively what poor, dull streets they form. Which are preferable, the stone or the brick buildings of London, or Liverpool, or Berlin, or any other large town? To take actual examples, which do you think finest, which most suitably expresses the dignity of a great city? The embankment front of the Hotel Cecil, or Whitehall Court; the new Admiralty or the Horse Guards; the Houses of Parliament or St. Pancras Hotel; St. Albans Abbey tower, which Mr. Newton mentions, or the Angel Steeple at Canterbury? We might extend the list *ad infinitum*.

Brick, in fact, has proved unsuitable in every way in these large town buildings. It has become dirty, losing colour and light, and the size of the brick, a dimension far too familiar to all the world, is quite out of scale with the size of the building. Large town architecture requires a larger treatment than brick will allow of; the best possible effect must be aimed at, and will not be obtained by the use of brick. Large masses of brick in a town become dull and monotonous, and we cannot give the brickwork that natural setting of green trees and blue sky, against which it looks so fascinating in the country. It is so much a natural material that it requires a natural setting. This age and this country are almost alone in the large use of brick. Mr. Newton tells us that the Greeks concealed their brickwork, and although at first thought one might urge the Roman and Byzantine buildings as examples of large town work in brick, they are not really so. The Roman brick is probably much more familiar to the modern country parson than it ever was to the citizen of ancient Rome. Both peoples used it in their largest buildings, but always concealed it, and the Byzantines evidently did this in recognition of the fact that in them brick was an unsuitable material, at any rate for display, for in their smaller buildings they used it deliberately, obtaining effects with it which were charming, but necessarily small in scale and design, and inapplicable to large building schemes.

Something of the same recognition of the charm of brick in small work, and its unsuitability to large work, appears in the buildings of our eighteenth century forefathers, who knew certainly as much as we do about town architecture, and never used brick in important streets without disguising it. The French and the Americans, who know more than we do about that subject, hardly, if ever, use brick. We find ourselves again in that insular position so peculiar to ourselves, contentedly persisting in practices long ago dropped by the rest of the world. Where, you may ask, come in the familiar Georgian buildings, old and new, which we all admire so much? Well, I consider them as eternal proof that brick is not suitable, for are not all the effects which combine to make up their charm obtained with other materials? Is it not with the stone or wood cornices or quoins, windows and doors of painted wood or iron? This use of other materials is but an honest confession of inability to achieve a completely satisfactory result with the bricks that form the greater part of the walls. Again, the picturesque gabled outline one associates with so many brick buildings is not peculiar to them, and can be done just as well in stone.

Regarding the matter from a purely constructional standpoint, one cannot ignore ferro-concrete; it is just the material for the kind of building that Mr. Newton instances as the typical large town building, with its many openings, few supports, and demand for unencumbered floor space. It is only in our own benighted country that it is set apart for special occasions; abroad, in the land of its invention, it is used in large work and small, town and country.

To conclude, I maintain that brick is not an eminently suitable material for large town buildings, because with it the necessary and proper effects for town architecture cannot be achieved; because it does not retain its inherent aesthetic qualities, and acquires no others; and because it is possible to construct as efficiently, and often more efficiently, with other materials.

Mr. H. FRANK MURRELL thought that Mr. Newton would have done better if he had considered brick as a fair material. The appeal for its support had been based on

three grounds, viz., history, science, and the artistic sense. The reference to history seemed unfortunate. For instance, the Greeks covered their bricks with stucco, and the Romans with concrete. On the other hand, in support of the argument, there were Byzantine buildings and those of northern Italy; or in this country there was the wonderful group of brick buildings in Essex. Mr. Newton had completely ignored the question of matrix, which in normal brickwork amounts to one-fifth and in stonework to one-hundredth of the surface. Nor did he say how he would construct his joints. A most happy instance of gauged brickwork was the old section of the Victoria and Albert Museum. As to the appeal to science, it should be remembered that dilapidations, raking out and repointing, were hard to avoid in brickwork. Finally he appealed to the artistic sense. Wren in Hampton Court realised that the King's palace was also the King's home. The feeling of homeliness is emphasised by brickwork; and it is not such a quality as that which is wanted for large town buildings.

Mr. G. FILDES suggested that when Wren built Chelsea Hospital of brickwork he probably had no aesthetic consideration in his mind, but did so solely for economic reasons. The suitability of brick as a material had just been disparaged on the ground that the inevitable repointing was scarcely a dignified process. But cutting out portions of ashlar which have shaled (as in the Horse Guards or the buildings of Oxford) was no less objectionable. The later Roman basilicas supported the contention that brickwork was suitable for town buildings. Mr. Newton had substantially proved his points. The arguments against his proposition were neither very telling nor very weighty.

Mr. HERBERT HALL thought that the arguments put forward by Mr. Newton had been spoilt by his last paragraph, to the effect that brickwork imparted an air of serenity and kindliness. Such qualities were not wanted in city architecture. There was about brickwork a suggestion of charm and gentleness which was unnecessary in large town buildings. It appeared to him that no architect had a right to use stone unless he had a very good design. If the much-talked-of Minister of Fine Arts was ever to come to life he ought to have the power of settling the material in which a design should be executed. The product of the quarries of Portland ought not to be squandered on inferior buildings as they are now. Consequently when one came across a brick building in a fine street like Kingsway, one would know that the architect was in disgrace. There seemed to be something very unpleasant about "the thoroughly reliable brick" which commercial travellers brought to one's office. It appeared only too true that nothing would ever destroy it, and that the brick would be precisely the same two hundred years hence. The brick that architects liked was affected by time. In designing buildings for the country the architect found himself, so to speak, over-ridden by nature. For a house in a beautiful site, whether in a picturesque village, in a wood or on a hill, stone seemed too pompous a material, for it asserted its individuality in a way it had no right to do. But in a city building nature is driven away, the architect has no such restraint, and he can assert himself by using the best material obtainable. In the country there seemed a need for something less imperious than brick. The practice of introducing narrow brick lines on a stonework front gave a sort of weakness of effect. Whenever one wished to express oneself on a top note, so to speak, one should use stone; whenever it was necessary to suppress one's individuality brick was the best material.

Mr. D. A. FORSTER disagreed with the suggestion that boldness was impossible in brickwork, and he instanced the Prudential Buildings in Holborn. One point in favour of brick had not been mentioned, viz., its incomparable fire-proof qualities. It was a slander to hold up brick as an abnormal collector of dirt. Stone was as bad in that respect, as was evidenced by the British Museum and St. George's Hall, Liverpool.

Mr. ARTHUR KEEN, in closing the discussion, took exception to one or two points made in Mr. Newton's paper, as, for instance, the claim to consider terra cotta as brickwork. The initial resemblance of the two, he said, quickly ceases. In architectural treatment terra cotta is used more like stone than brick, being employed in large lumps. He also dissented from the suggestion that it was not until the seventeenth century that brick was regarded in England from the point of view of its colour and texture. Brickwork was never prepared to receive a plaster coat, and the architecture of cities depends for effect on such things as are impossible in brick-

work. Some of the most charming effects of St. Paul's and other town buildings are traceable to the accidental effects of weather and smoke. Half the effect of Portland stone is the intense black contrasted with the vivid white where the soot, &c., has not been washed away. Wren's two or three brick churches were not exactly treated architecturally—St. Benet's and St. Mary Abchurch, for example. There is, of course, dignity to be got out of brick, but not in the same way as stone, which, as the handsomer material, seems best fitted for towns. Moreover, the necessities of design in town buildings render brick unsuitable.

Mr. NEWTON, in replying to the points raised, asked why, if accidental effects were so important, did they not so arrange their mouldings and projections that the weather would do precisely what was desired. In conclusion, he said that the historical claim for brick was that it had been used by the great building ages of the past—though this did not mean that it must still be employed in precisely the same way. Its economic claim was that it is more impervious to the atmosphere than any other material. And finally its artistic claim was that it is capable of introducing that note of serenity and kindness in towns already monumental enough in size.

FREDERIC SHIELDS.

[BY A CORRESPONDENT.]

ON Sunday night death came to release Frederic J. Shields from a life which had had an over-brimming measure of pain, sorrow, and disappointment. From the time of his birth in Hartlepool, some seventy years ago, until the day of his death, at "Morayfield," Merton Park, a series of trials have succeeded one another with painful insistency. But up to the end his spirit was unbroken and his trustful confidence in the Supreme Will remained undiminished.

The story of his career is that of a brave man struggling with adversity. But in his case the final triumph of failure could scarcely be said to have been completely attained. He was born of humble parents, and received a rudimentary education in London, at the Charity School of St. Clement Danes. At an early age he showed signs of having inherited such artistic instincts as had not been eradicated from his father's nature by a suspicious Scotch mother and unremitting toil as a book-binder's finisher. As a small boy he would play truant in order to hide in a garret at his lodgings, where amongst the rubbish were some old prints of antique statues. These, he tells us, he would copy with trembling delight while daylight lasted. The same earnestness sent him to the British Museum to make untutored drawings direct from the antique. When fourteen he had to join in the stern battle for daily bread. For the next three or four years he worked for various lithographers. This distasteful drudgery was broken by a firm of Manchester printers dismissing him for incompetency. Of his next three employers, two died and one became bankrupt shortly after his joining the firm.

Shields next gained a somewhat precarious livelihood as an artist. But his work was chiefly for lithographic firms, varied by the production of a few water-colour subjects. In 1860 his position became less insecure, and he began to illustrate books. Five years later his water-colours won for him admittance into the ranks of the Old Water-Colour Society. When he finally left Manchester for London, in 1874, he had earned sufficient reputation for an exhibition to be held there of his works and a public dinner to be given to him.

To the friendship of Mr. Alfred Waterhouse, R.A., Mr. Shields owed much. It was through that architect that he received a commission from the Duke of Westminster to design the stained glass and mosaics in the chapel at Eaton Hall. The work was begun in 1880 and continued till 1890. It was followed by a much greater task, and one which was to monopolise the remainder of his life.

Shields, through Dante Gabriel Rossetti, had become friendly with Lady Mount Temple, and she in her turn brought Mrs. Russell Gurney, widow of a Recorder of London, to the painter's studio. The latter lady had been deeply impressed some years before by a small chapel in Florence, where no services were held, but which was always open for prayer and meditation. Mrs. Gurney became filled with a desire to set down a somewhat similar resting-place in some great highway of London or other large city. The walls of the outer court of her imaginary haven were, she says, haply painted with deeds of brotherly kindness. After many discouragements authority was obtained in 1890 to

erect a new building on the site of the disused mortuary chapel of the old cemetery on the Bayswater Road, W. Plans were prepared by Mr. Herbert P. Horne, the architect, writer, and connoisseur, who visited some of the northern Italian cities as a preliminary, paying particular attention to the principal church of Pietro Santa, in the Carrara district.

The controlling feature of the design for the chapel of the Ascension was the necessity to provide unbroken spaces for Mr. Shields' wall paintings. To this everything had to be made subservient. Moreover the difficulties of the site were great, for the old chapel on one side and the caretaker's dwelling on the other had to be left untouched. The aisleless chapel is long and narrow, principally lighted from windows near the roof. It is entered through a considerable porch or ante-chapel. The entire surface of the interior is covered with the paintings which represent twenty-one years' unremitting toil and study by Mr. Shields. The east or end wall has for its principal subject the Passion, Resurrection, and Ascension. On the north wall the figures of the Apostles are alternated by subjects taken from the Gospels; and on the south wall the figures of the Prophets are alternated by incidents taken from the Acts of the Apostles. The whole design was intended to express the eternal purpose of God's redeeming love, developing through successive dispensations—Patriarchal, Mosaic and Christian. Mr. Shields, in his handbook on the chapel, says that in consultation with the architect and Mr. W. H. Burke he decided to rivet blocks of slate to the wall, leaving an air-chamber behind, and then to affix his oil-paintings to the slate with a composition of white lead, &c.

The completion of this great undertaking has coincided with the artist's death, and he may well have sung "Nunc Dimittis" when the last panel was completed. Of late years Mr. Shields had been the victim of serious ill-health, and at times his work was executed in the greatest pain or had to be abandoned altogether. Indeed, it became a painful race between an iron will and approaching death. In a letter to the writer some eighteen months ago, he said: "I am trying, but feebly, to work—and that at tasks that demand all my old gone energy." A less invincible will would have given up the struggle or deputed the work to others. But Mr. Shields was of the stuff that heroes are made, and he overcame this last obstacle as he had overcome so many others. His nature was ill-suited to the rough and tumble of life. The slings and arrows of outrageous fortune that would have been unfelt by thicker skins cut him to the quick. His whole-hearted earnestness and his uncompromising single-mindedness made him seem when roused like some prophet new-inspired. Those who came into contact with him could not fail to be morally quickened by his loftiness of soul. For the past twenty years Mr. Shields had been saturating his whole being with the Scriptures, and out of that cleansing stream his spirit came purified and noble.

POMPEII: THE CITY OF THE DEAD.

AT Carpenters' Hall, London Wall, E.C., an interesting illustrated lecture was given on Feb. 23 by Mr. Whitworth Wallis, F.S.A., dealing with Pompeii. Mr. Wallis said that he was going to tell a fairy story of the pickaxe and the spade. The many opportunities and facilities afforded nowadays for visiting the ancient cities of Greece and Rome rendered the study of archaeology as interesting as it is important. Egypt and Greece and India were the fountain-heads of civilisation and the sources of our knowledge. To them is owed the origin of all that is ornamental in architecture. Their ruins fill the mind with wonder and astonishment. Few English-speaking people had not read with mingled pain and pleasure Bulwer Lytton's "Last Days of Pompeii"—that striking and graphic account of the Roman city which two thousand years ago was basking on the sunny shore of the Bay of Naples. The catastrophe alone kindles one's interests and excites one's sympathies, and those sympathies are redoubled on walking through the streets, looking at the temples or viewing the theatre. The power of looking into the future being denied to us, it is profitable to devote ourselves to the retrospect of the past and to study the wrecks of history.

One of the most fascinating of those wrecks known to us is Pompeii. Pompeii was founded six or seven hundred years before the birth of Christ. It became subservient to Rome at the time of the conquest of Campania by the Samnites. In 63 the city was visited by an earthquake and was more or less destroyed. Pompeii and Herculaneum had become by that time summer quarters for the aristocracy of

Rome. The inhabitants were consequently desirous of rendering the new town more worthy of imperial patronage, and they introduced the prevailing fashions of Rome. There are, therefore, various styles of architecture to be seen. The rebuilding can easily be traced. The hurried and careless manner in which the shattered buildings had been repaired, gaudy in colour, debased in form and in strange contrast to the architectural unity and chaste classicity of the older buildings, notably the Greek temple, which had been erected in a happier period of art. The columns, capitals, cornices, and minor details were covered with reliefs in stucco, impressed whilst wet with moulds—a cheap and easy way of producing effects—and these cornices, &c., were picked out with various colours strangely intermixed. The houses were built fantastically and gaudily decorated. Yet at times much of the decoration is marked by elegance of details and there and there a fine harmony of colour. But, added Mr. Wallis, the restorers of Pompeii of the first century before Christ were not one whit more objectionable than the church restorers of the nineteenth century of the Christian era in England.

It had been said that "the glory that was Greece was the glory of solid marble; the grandeur that was Rome over a core of adamant concrete." Pompeii was really stone, brick, and rubble cased in hard polished stucco. Though the rebuilding changed the general character of the city, the Romans could not, or at least did not, sweep away Greek art altogether, and they handed down to posterity an almost perfect Roman city of the time of Vespasian strongly marked in places with the last traces of the arts of polished Greece. The probable rebuilding must have lasted for some fourteen or fifteen years, though even by the time of the destruction in A.D. 79 alterations were continually taking place. At any rate, we have a town rebuilt between the earthquake of 63 A.D. and the eruption of Vesuvius—a period brought to a standstill on a November afternoon of 79.

The usually accepted date for this destruction is August 24. But there is a discrepancy among the manuscripts that have recently come to light. The clearings made have also pointed to a different date. For example, many specimens of fruit have been found like dried grapes and walnuts; besides wine jars upside down (being got ready for the new wine), and finally a very beautiful laurel tree that had reached maturity. It would appear as if the destruction took place on November 24 and not on August 24. In two or three days the ruins were covered with lava and ash, and the doomed city had entirely disappeared. No serious attempt was made to rebuild the little city, and Pompeii slept beneath the mulberry and the vine for nearly 1900 years. This sleep was broken in 1755 when systematic excavation on the site commenced. In 1863 Signor Fiorelli scientifically grappled with the problem. The excavations have ever since been carried out, declared Mr. Wallis, in a manner that must meet the approval of the most exacting of archaeologists. The depth of the soil varies; on the average it is from 11 ft. to 14 ft., though in one place there were 27 ft. of pumice stone. The earth and ashes are dug by boys with large broad spades and removed in trucks. There is much fascination in the work, no one ever knowing what the next spadeful may bring to light. When a piece of wall-painting is revealed the reds and blues and greens are as brilliant as if they had only just been executed.

With the exception of a few of the principal ones the streets were always narrow. The Street of Abundance, the widest, was only as wide as twenty-two feet. Innumerable fountains were everywhere. Names given to the houses frequently have reference to the objects found there or to a distinguished visitor present at the time of the excavation. Pompeii used to be a very busy place, and it was usual to cover exterior walls with advertisements, after the manner of the present-day billsticker. Between 500 and 1,000 of them have been brought to light. The most interesting refer to individuals standing as candidates for important offices and posts. These were the origin of the flaring placards which decorate and desecrate London at election times. One inscription was: "O, wall! I wonder you don't smash under the weight of this silly trash." Another inscription ran: "Stolen one jar; whoever brings it back will be well rewarded. If he brings the thief back he will receive double." Trade signs have been also found. All the shops were small; one young lady owned ninety of them.

Nowhere else can the domestic architecture of Rome be studied so well. To the exterior of the houses of Pompeii very little attention was paid; if the front was not let out for shops it was rudely coloured. The windows were small and filled in with talc and thick untransparent glass. The pictures of Sir Laurence Alma-Tadema brought home to one

what the interiors looked like. The walls were coated with a beautiful marble stucco on which the Greek artists executed their paintings. Floors were sometimes paved with marble, sometimes with cement and mosaic. Hanging lamps were used for lighting. The houses were entirely heated by braziers, not a single fireplace having been found.

Mr. Whitworth Wallis then proceeded to give details of various buildings such as the House of Cassius, the Villa of Diomedes, the House of the Faun and the House of the Military Governor. Probably the most magnificent yet unearthed is the House of Betius, on which work was commenced in 1898. When the authorities set to work they found it so full of treasures that they decided to leave the objects in situ instead of removing them to the Naples Museum. They have in this way presented an almost perfect house of the period. The House of the Golden Cupids is the last one to be cleared; it is a beautiful one, with many interesting wall-paintings.

Every great town possessed a forum. It originated at the intersection of four cross-roads and later became very much elaborated. At Pompeii it was the centre of business and of pleasure and was surrounded by the principal buildings. The centre was paved with marble. At its north end stood the Temple of Jupiter, a large building approached through a vestibule with six columns. The cella was beautifully decorated. On the western side are the remains of the Temple of Apollo. The courtyard is bounded on its three sides by a portico, having forty-eight columns painted in blue, yellow and white. At the time of disaster the figure of the god was wrenched away from its fastenings by thieves, who in endeavouring to escape broke off the legs, threw the body into a well, and sought refuge in a cellar with the legs. Their bodies were afterwards found. Though the worship of Isis was forbidden the cult was very fashionable. The small temple to this goddess was gorgeously decorated. At the back stood a large apartment in which were found many skeletons, presumably of the priests who took shelter there.

There were two theatres. One of these—the Great (or Tragic) Theatre—was commenced by the Greeks, but in its present state is of Roman construction. It could have seated six thousand people. The seats were of marble, and the stage was a narrow one. The Small (or Comedy) Theatre was curious in having a permanent wooden roof. Scenes of the most revolting cruelty are conjured up by the Amphitheatre with its seating accommodation for thirty thousand people. The floor was of scented pumice stone, which both sucked up the blood and afforded a firm foothold. This amphitheatre could not be used for the great naval spectacles given elsewhere.

All of us, said Mr. Whitworth Wallis, in conclusion are immensely indebted to Vesuvius for its preservation of this monument of the ancient world. Since the city was buried race has succeeded race and dynasty has succeeded dynasty. The utterance of the past is in this city more distinct than anywhere else in the whole world, and you feel you are in touch with the people of two thousand years ago. To some people it may be merely as an American said, a great many acres of ashes and rubbish with everything beneath in a very bad state of repair. To others Pompeii serves as a kind of invisible bridge linking the mighty civilisation of the past with the still mightier civilisation of the present day.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.

A MEETING of this Society was held in the general lecture room at the University on Thursday, February 23, when Mr. J. B. Mitchell-Withers, vice-president, gave an interesting lecture, entitled "A Visit in Warwickshire." Mr. W. J. Hale, president, occupied the chair.

The lecturer attended the Congress held last year by the British Archaeological Association in Warwickshire, and the buildings described were almost entirely those visited during the Congress. He referred to the military importance of Warwickshire in ancient times, owing in a large measure to its central position in the country and to the fact that several old Roman roads, including Watling Street, and the Fosse way, passed through or near its borders. He made a passing reference to a few remains of archaeological interest, such as the Rollright stones, and then proceeded to speak of Kenilworth, one of the strongholds held in the Norman period by the De Clinton family. The connection with John of Gaunt with this historic building was mentioned, and the large Hall and other portions erected by him were described, as were also the additions made by the Earl of Leicester, the favourite of Queen Elizabeth.

Other domestic buildings of the county were then described; these included the moated grange of Baddesley Clinton, the charming brick and stone mansion of Compton Wynyates, and Wroxham Abbey, the seat of Lord North, which contains portions of the pre-Reformation structure.

The lecturer then described the ancient cities of Warwick and Coventry, with their interesting churches and other ancient buildings. He dealt particularly with the church of St. Mary, Warwick, which suffered from fire and was largely rebuilt at a time when Gothic architecture was more or less a lost art. The chancel and Beauchamp chapel largely escaped damage at the time of the fire, and these with the beautiful tombs and stained glass contained in them were ably described. The churches of Coventry, chief amongst which is St. Michael's, with its magnificent tower and spire, were then dealt with, the lecturer calling particular attention to the connection of St. Michael's Church with the ancient Guilds of the city.

Leaving the ecclesiastical buildings, the lecturer described Ford's Hospital, Coventry, and the Leicester Almshouses in Warwick; part of the latter, he said, dated from 1383, although the present charity was not founded until 1571. The old chapel of St. James, adjoining the latter building, and situated over the west gate of the city, led to a description of the east gate and the large and interesting Castle of Warwick with its remains of feudal splendour.

The lecture, which was illustrated by an excellent series of lantern slides, concluded with a reference to Rugby and its school buildings, including the chapel erected from the designs of the late Mr. Butterfield.

A hearty vote of thanks was accorded, on the proposition of Mr. Horace Wilson, seconded by Mr. J. C. P. Fotherill, and supported by Mr. A. F. Watson and the Chairman.

THE ILLUMINATING ENGINEERING SOCIETY.

THE LIGHTING OF LIBRARIES.

(Concluded from last week.)

MR. J. H. QUIN said that at the Chelsea libraries arc lamps had first of all been used for general lighting, but of late years they had tried, with a good deal of satisfaction, the spiral Nernst lamps which were economical as far as current consumption was concerned, but were far from economical in the use of burners, which were expensive. Since the whole of the lighting had been changed over to metal filament lamps it seemed that they had got to the end of their troubles, there being plenty of lighting at a small cost for trouble and also for lamps. The figures might be of interest. In 1906 they paid 194*l.* 16*s.* for current and this gradually came down until in 1909 it was 157*l.*, and in the year just closed 135*l.* This, of course, was only half the story as they had doubled the lights as to candle power. In 1909 they paid 20*l.* for lamps, but in 1910 this figure was reduced to 4*l.* 18*s.* 8*d.* When they were dealing with limited funds, it was of immense importance to look after the general lighting. He had his own views as to the necessity for making the newspaper part of a library attractive by increased light. They did not wish to be looked upon as philanthropic institutions but there were the attractions of public-houses, and therefore his Committee liked to see their libraries nice and bright in order to attract the loafer and other people who sometimes got into the public-houses. For many years in his reference libraries there had been standards on the tables which the readers put on and off as they pleased, and he had found a great deal of care exercised in the direction of switching off the light when it was not wanted, or not switching it on at all if it were not absolutely necessary.

At this point the President asked leave of the meeting to vacate the chair as he had another appointment to keep. Mr. R. J. Wallis-Jones thereupon took the Chair.

Mr. T. E. RITCHIE expressed his surprise that more reference had not been made to inverted lighting. This form of lighting, in his opinion, had many advantages for the general illumination of that portion of a library in which the books were housed. The question of furniture had been touched upon and in this connection inverted lighting gave an ideal amount of flexibility in the disposition of the furniture. It was often thought to be a very difficult matter to satisfactorily light gangways with inverted lighting, but he could show them that even under adverse conditions it was not so difficult as it might appear. He had one or two slides which he wished to show the meeting. The first one represented a room which was not a library but was allied to one in many of its arrangements. It was used for the

ling o f documents, and contained a number of gangways which were 6 feet long by 2 feet 6 inches wide and 8 feet high in room which was not more than 10 feet high. That room was lighted by 2 eight-ampere inverted arc lamps, and the work illumination given, on the floor in one of the corners, was 2.4 foot-candles. The illumination of the shelves and also the of the tables was very carefully measured and upon the latter it was found to be from 6 to 10 foot-candles. From the next slide it would be seen that the general tone of the bookshelves was extremely dull, it being necessary to give 1½ minute exposure at 22, using the lamps as the source of illumination. The next slide showed the heights on the bookshelves at which the illumination was measured, and it was to be seen that on both sides of the shelves the lighting was remarkably even, and the general effect would have been improved by the adoption of Mr. Harrison's suggestion of the use of a druggist on the floor. The first reading from the floor was at a height of 17 inches, there being 2.63 foot-candles; at 30 inches there were 2.66; at 43½ inches the reading was 2.71; at 57 inches it was 2.9; at 71 inches it was 3.07 and at 83 inches it was 3.4 foot-candles. In other words, the maximum variation in 8 inches was only 0.85 foot-candles. He thought these figures demonstrated very conclusively what could be done by the suitable use of inverted lighting, and librarians ought not to ignore that aspect of the situation. He believed that if the system were more generally adopted libraries would be much more frequented by those who had any ideas of personal comfort and any consideration for their eyes.

Mr. V. H. MACKINNEY said the engineers of the Holophane Co. had shown considerable interest in this discussion, the results of which they felt would be of great service to them in their everyday work. Since the last meeting, with the permission of the Patent Office Librarian, they had been permitted to submit a scheme for lighting the alcoves at the Patent Office. These were about 15 feet long by 12 feet wide, the height being about 12 feet. The two longer sides of the rectangle were lined with bookshelves, there being a table about 8 feet by 4 feet down the centre. The old arrangement of lighting was to have pendants of four lamps of about 2 watts hung about 3 feet above the table and near the centre, this serving to light the table and the bookshelves. This method had served for several years, but since the last meeting he believed a new method devised by the Patent Office's own engineers had been tried. Then the Holophane Co. were allowed to submit a scheme. The illumination on the table by the original method varied from just over 2 foot-candles to just under ½ foot-candle, whilst at the lower end of the bookshelves it was as low as one-third foot-candle. The new scheme of the Patent Office engineers had increased this illumination on the tables to from 3½ foot-candles in the centre to 2½ at the edge. By the scheme which the Holophane Co. were allowed to submit the illumination right along the centre of the table was 4 foot-candles whilst at the edge it was 4.4 foot-candle. On the bookshelves they were able to increase the illumination six times and this had been accomplished in spite of certain difficulties such as having to suspend the lamps in a certain way from the ceilings, that there must be no new wiring, and that the present wattage had to be made use of, &c. The old arrangement of the lighting was to have two lamps on each side of the table, with the result that the shadows of the readers were cast upon the table by the lamps. Under the Holophane Co.'s method there were arranged three lamps down the centre of the table without any shades. The speaker then drew attention to a new form of reflector which the Holophane Co. is experimenting with, the object being to throw an even illumination over a flat or nearly flat surface. When perfected, this should be of great value in the illumination of bookshelves. Dealing with the question of indirect lighting and the use of arc lamps as mentioned by Mr. Ritchie, he said the distinct disadvantage of any method of indirect lighting was the tendency to a higher value for the upper plane of the hemisphere. There was a need for a greater value for the working plane. He did not regard some form of general illumination plus table lighting as the ideal for library lighting and in this connection they must pay attention to the nature of the desks. Sloping desks ought to be used to get the maximum result, and possibly the ideal system to be aimed at would be local lighting of desks with sloping tops, individual lighting for bookshelves and keep the general illumination as low as possible. He suggested 10 foot-candles on the bookshelves and one-tenth foot-candle for general illumination.

Mr. V. C. MIDDLETON said he was thoroughly in agreement with Mr. Haydn Harrison's remarks as to the general arrangements for lighting in libraries. He had never had to light a library but he had had to deal with similar rooms and his experience was that the indirect lighting referred to by Mr.

chie was not even possible—at any rate in the buildings had had to deal with—owing to the absence of suitable surfaces to act as a reflecting medium, presumably due to decorative considerations. Mr. Ritchie's slides showed how indirect lighting could be used in suitable circumstances, but these circumstances had invariably been absent from the buildings he had had to deal with. He would like to ask Mr. Ritchie how the cost of indirect lighting by means of arc lamps compared with metal filament lamps, because, as one of the librarians had pointed out, the cost of current entered largely into the question, and it seemed to him that the use of arc lamps for library lighting must entail a considerable addition to the cost of current. He commented upon the large number of libraries in which the lights were exposed to the eye and the very unsatisfactory nature of such lighting, especially when the lamps were near the ground level. Great care should be taken to shield the lamps from the eye and to make the general lighting subsidiary to the local lighting for reading on tables. With regard to lighting of tables, he thought the thing to aim at was to have the weakest possible light and should be possible to have lamps the light of which could be varied according to the fancy of the reader. He had had experience with lamps of this class in bank work and they seemed to give great satisfaction. Adjustable shades were so useful things to have in the same connection. With regard to the very interesting figures taken from lamps in position in libraries, as a contractor he realised the great difficulty in arriving at any definite figures beforehand of the exact amount of illumination required for say lighting tables or bookshelves, i.e. before the building existed. As a contractor his experience was that whatever arrangement he might be called upon to tender for was invariably altered later, and nobody seemed to be able to work out beforehand the scientific distribution of light. Certainly the contractor could not be expected to do this when he did not know where the light had got to go. Consequently, it seemed to him that the poor contractors must look to the architects to be more certain in their requirements when they asked a contractor to tender, because otherwise they were putting upon him an impossible task: they were asking the contractor to work out something on scientific lines without giving any real data upon which to found his calculations.

Mr. H. V. HORWOOD (Patent Office) said he only spoke again because the results of certain experiments at the Patent Office had been mentioned. Some of these experiments were quite personal and did not concern the Government in any way. It seemed to him that it was a question of what did the public want and how was the architect going to supply it, and when he had supplied what was required how was it going to be altered, if necessary. At the Patent Office they were now altering what the architect had put in, and from this point of view any experiments were valuable because they gave valuable information to other people working under similar difficulties. What had been done at the Patent Office was to take out the clusters of four lamps, as obviously they left the corners of the bookshelves in darkness. In order to make alterations without extra expense they had merely re-arranged the position of the lamps. At first they were placed too close to the tables for reading purposes and the next re-arrangement showed that they were too close to the bookshelves and that the bottom and least used books were best lighted. Leaving the lamps down the centre of the table, they were then dropped a little lower with the result that they got about 0.6 foot-candle at the corners of the bookshelves, which was not bad for the purpose merely of finding a book. At the same time with old bindings it was not very distinct reading and more light still was wanted. Further experiments, however, were still being carried out, the details of which must not yet be made public. It seemed to him that what librarians wanted to know first of all was the minimum light that a man ought to have for reading by in the ordinary way; how much light he ought to have if he were puzzling out a reduced diagram in a newspaper or trade journal and so on. What he would like was a specification saying how much light was required to read a small scale drawing; how much to read an ordinary book; how much to find a book on the stack; how much illumination for the book face, &c., and it would be the fault of the librarians if they did not carry such a specification out.

Mr. W. H. TOPLEY (Croydon) said he was disappointed that the speakers who had referred to diffused lighting had mentioned it merely as a means for getting about the library, and that for the actual purpose of reading it was a thing to be avoided rather than otherwise. Personally, he entirely disagreed with that view. Unquestionably they should first of all make the greatest possible use of daylight in the lighting

of libraries, and then adopt indirect methods of lighting artificially. Mr. Jast had mentioned experiments with indirect lighting in a magazine room of the Croydon library. This room was some 45 feet by 30 feet and 14 feet high. It was very dimly and unsatisfactorily lighted, and in the course of the re-arrangements the walls were coloured a very light shade and the ceiling white, and the sole source of artificial illumination was a number of lamps with reflectors placed close up to the ceiling entirely out of range of the eye of any reader in the room. It was a satisfactory and fairly economical light and the experience of those using the room was that it is a most desirable form of lighting. This sufficiently indicated to his mind that indirect lighting in itself was a desirable thing where it could be got, and he preferred to express the relative positions of the two forms of lighting by saying that as far as possible indirect lighting should be extended and open lighting reduced to the smallest possible limits.

Mr. J. S. DOW, the assistant hon. secretary, then read a communication from Mr. J. S. WALDRAM on the subject of daylight illumination. The writer regards this as important as artificial lighting, particularly because people read so much during daylight hours. Moreover, the architectural features limiting the admission of daylight could not easily be altered. The value of high angle lights was now becoming recognised by the architect. In practice the greater part of the light used for reading came from a high angle of 70 to 85 degrees above the horizon. Therefore he preferred top light windows to vertical ones, and this was one reason for the comfort with which people could read in fading daylight in certain libraries such as the Patent Office library, British Museum reading room and St. George's library in Buckingham Palace Road. Yet in the two first cases readers received only 7/1000 and 5/1000 of the outside illumination respectively. In conclusion, therefore, he advocated lighting where practicable from the ceiling instead of the walls, and the upper portions of the walls should be light in colour.

Mr. JUSTUS ECK (Union Electric Co.), on the question of indirect lighting, said a good deal had been said about the intensity of light, but it seemed to him that considerable attention must be paid to the quality of the surface one is reading from. Mr. Darch had particularly mentioned modern glazed printing surfaces, from which it was inevitable that some reflected light got into the eyes and spoiled either the contrast of the print or the beauty of the illustration, and it was in this connection that the question of indirect lighting required the greatest consideration. All those who had had to work very closely at books or read at night or make calculations or drawings by means of indirect lighting would agree with him that there was no other form of lighting with which they had continued to work without that fatigue which told that it was time to go home in the evening. In an office he knew it was very difficult for the people there, who were working with indirect lighting, to realise the time in the evening, so little did they feel the fatigue of their work.

Mr. J. DARCH briefly replied to a few of the points raised in the discussion. As to what was the proper illumination for reading, he was inclined to think that it was best to use a lamp that could be swung up and down and thus be made to give from 2 to 12 foot-candles. This would be a very useful light, and the movable fitting would enable almost every taste to be satisfied. With regard to indirect lighting he had mentioned this as very desirable where possible, but there were many places where it would be quite unsuitable and where direct lighting would be very much better. It was a matter entirely of circumstances. Further, direct lighting was much the cheapest. Several speakers preferred to make general lighting answer all purposes, but he thought this was a great mistake. It was very expensive. For instance, if 5 foot-candles were required upon the table and the general lighting was 10 feet high, it would need 250 foot-candles to give this amount on the tables, besides which, there would be an enormous blaze of light all over the place and a consequent waste of current. For general lighting he thought that 0.75 foot-candle was sufficient as an average figure, but circumstances would alter the quantity required. For instance, in a room with dark walls having paintings, such as at the Society of Arts, a greater amount would be necessary owing to the poor surface brightness.

Mr. JAST, who was unable to be present, sent a communication in which he said he regarded local illumination merely as a necessary evil, and disagreed with the contention of Mr. Darch that general lighting alone was inefficient. The only possible standard by which to judge the perfection of artificial illumination was daylight; it logically followed that as we departed from diffused lighting just so far was our artificial lighting bad and reliance upon local lighting was, he thought,

a precise measure of our failure to solve the problem. Mr. Darl had advocated that each reader should control his own light, but he regarded the suggestion as undesirable, as it was not practicable to consider the idiosyncrasies of each individual person. A point of fundamental importance was the intensity of illumination desirable from the physiological standpoint. It was a commonplace that people demanded a higher illumination to-day, but how far was this a matter of fashion set by the greater brilliancy of modern illuminants and to what extent a real physiological want? He would like to be re-assured upon this point before forming a definite decision as to the order of illumination desirable; there seemed to be a need for exact research on this matter. If no data on this point were available, he hoped the Illuminating Engineering Society would take the matter up and organise a truly scientific enquiry.

Mr. J. DUFF BROWN said there seemed to be a great deal of general agreement upon this question of library lighting. With regard to local lighting, he thought a lamp on a table was a great nuisance. Some of the speakers had been rather severe on the architects, but it must not be overlooked that architects were not lighting experts. It seemed the practice at present to bring the wires to certain points in a room and to finish the room off before the fittings were added, thus making it impossible to alter the positions afterwards. He suggested that in all new buildings the wires should be brought only to the corners of the rooms, and thus give the lighting engineer a chance to experiment as to the best positions for the lights. In conclusion he suggested that a committee should be appointed consisting of architects, librarians and engineers, to fix a set of normal conditions for library lighting. No doubt certain conditions could be drawn up by a committee which would avoid, for instance, present methods of bringing wires into buildings, and the whole thing considered upon a scientific and satisfactory basis.

The Chairman proposed a vote of thanks to the authors of the papers, and announced that at the meeting on February 16, the subject of school lighting would be discussed. Dr. J. Kerr, Medical Officer to the London County Council, would open the debate.

UNIVERSITY OF LONDON LECTURES ON ARCHITECTURE.

ROMAN Tombs, Aqueducts, and Bridges were discussed by Mr. Banister Fletcher in his lecture at the British Museum on February 14.

Roman tombs are numerous as compared with those of the Greeks, and bear a close resemblance to Etruscan examples. Ordinary burial as well as cremation was practised, the bodies of emperors being usually burned on funeral pyres from which an eagle was set free, symbolising the flight of the soul.

Towards the second century, however, cremation became less usual, the wealthier classes having their bodies embalmed and placed in sarcophagi, while those of the slaves and freedmen were reduced to ashes and placed in urns in the same apartment with the sarcophagus; but ordinary burial was associated with Christianity from all times.

The columbaria were recesses or niches cut in the tufa to receive the urns (ollæ) containing the ashes, or the sarcophagi of those who were buried. These columbaria were usually in caves or subterranean vaults outside the city, as interment was strictly prohibited within the walls of Rome with certain rare exceptions.

The catacombs were easy of access until the services which the early Christians conducted in them were forbidden, when their entrances were made secret.

Monumental tombs, probably a survival of the prehistoric tumuli, strengthened at the base by a ring of stones, were usual with the Romans for important personages.

The tomb of Cecilia Metella, on the Via Appia, is an example of these.

A circular mass of masonry 94 feet in diameter is supported on a square podium measuring 100 feet, which contains the tomb chamber. The frieze of the entablature is carved with ox-skulls and festoons, and probably the tower was crowned with a conical roof. The Ghibelline battlements were added in the Middle Ages.

The Mausoleum of Augustus was erected for that emperor and his heirs. As described by Strabo and others, it is known to have had a square basement surrounded by a colonnade, and supporting a circular mass 220 feet in diameter which contained the tomb chambers. A mound of earth laid out in terraces and grown with cypress trees covered the circular structure.

The Mausoleum of Hadrian, A.D. 135, now known as the Castle of St. Angelo, was planned on axial lines with the Pons Ælius which Hadrian built to connect it with the Campus Martius on the opposite bank of the river. The Mausoleum of Augustus had been filled by the various members of the Gens Julia and succeeding emperors, Nerva being the last; Trajan selected his own burial-place beneath the monument, so that a new imperial mausoleum became necessary for Hadrian. This consists of a square basement 2 feet wide and 75 feet high, which supports a circular tower 230 feet in diameter and 140 feet high. It had a marble peristyle and was crowned with a conical marble dome formed of steps. In size and magnificence the Mausoleum of Hadrian is said to have exceeded that of Mausolus of Halicarnassus.

Under Alaric the Goth, in 410 A.D., it was rifled and shortly afterwards was turned into a fortress. When besieged by the Goths the statues which stood on the square podium and between the columns of the encircling colonnade were hurled down upon the heads of the invaders, and were discovered in the seventeenth century in the moat. Among these were the "Dancing Faun" and the "Barberic Faun." Gregory the Great consecrated the building under the title of "St. Angelus inter nubes." In the tenth century it became a fortress, and in the Middle Ages, owing to the immense strength of its walls, it made a safe refuge for the Popes in times of danger, as it communicated with the Vatican Palace by a covered way. It has now been turned into a museum.

The tomb chamber was reached in a very complicated manner by a series of inclined planes to allow heavy sarcophagi to be dragged up on rollers, but communication is cut off at various points by trap doors in order to mislead and defy detection. The sarcophagus of Hadrian, which was of Egyptian porphyry, was destroyed by fire when removed to the Lateran basilica, but its lid forms the font in the Baptistery of St. Peter's. The conical dome and general arrangement of the mausoleum can be seen on the bronze doors of St. Peter's.

The Pyramid of Cestius, tombs on the Appian way, at Pompeii and various other interesting examples were also discussed by the lecturer, who then passed on to consider the aqueducts of Rome.

It was all important that a city like Rome should have a proper and adequate water supply. The reservoirs of the thermæ and the fountains consumed an immense amount, to say nothing of the domestic needs of the population of the city. The Romans were well acquainted with hydraulic law, and knew that water in a closed pipe will always rise to its own level, since they had an abundant supply in the upper storeys of their houses, carried in leaden pipes, but lead was very expensive and quite impracticable for long distances, not being sufficiently strong, and iron pipes were not then invented. They therefore brought their water from great distances by means of raised channels or aqueducts, having a gentle slope from the starting point. The water was conveyed in a specus or closed channel lined with hard cement carried by long series of arches often several tiers in height, which were easily constructed by slaves; this method was found to be the most economical of any, and has been reverted to in modern times with success in the Croton Aqueduct which supplies New York city.

Near the Porta St. Lorenzo there is a triple aqueduct; the lowest span carries the Aqua Marcia, the middle one the Aqua Tepula, and the highest the Aqua Julia.

Near Nîmes, in the south of France, there are remains of an excellent example built by Agrippa to serve the town of Nîmes. Originally it was 25 miles long. The Pont du Gard, as it is called, has three tiers of arches where it crosses the river Gard. The lowest arches at this point have a span of 78 feet. The masonry is laid without any mortar; the tiers supporting the arches are built with ledges, like impost blocks, on which to rest the temporary centring, which could easily be removed from arch to arch, the ledges remaining and serving always for repairs; in the larger arches the voussoirs are also made to project to support the centring. Other examples at Taragona, Segovia, &c., were shown upon the screen and discussed.

Roman bridges were remarkable for their solidity of construction. They were built level with the road and did not rise. The Pons Milvius is an interesting example. In the thickness of its piers it has arches to allow the water to flow through, in order not to cause too great an obstruction. This bridge was the scene of the defeat of Maxentius and his army by Constantine.

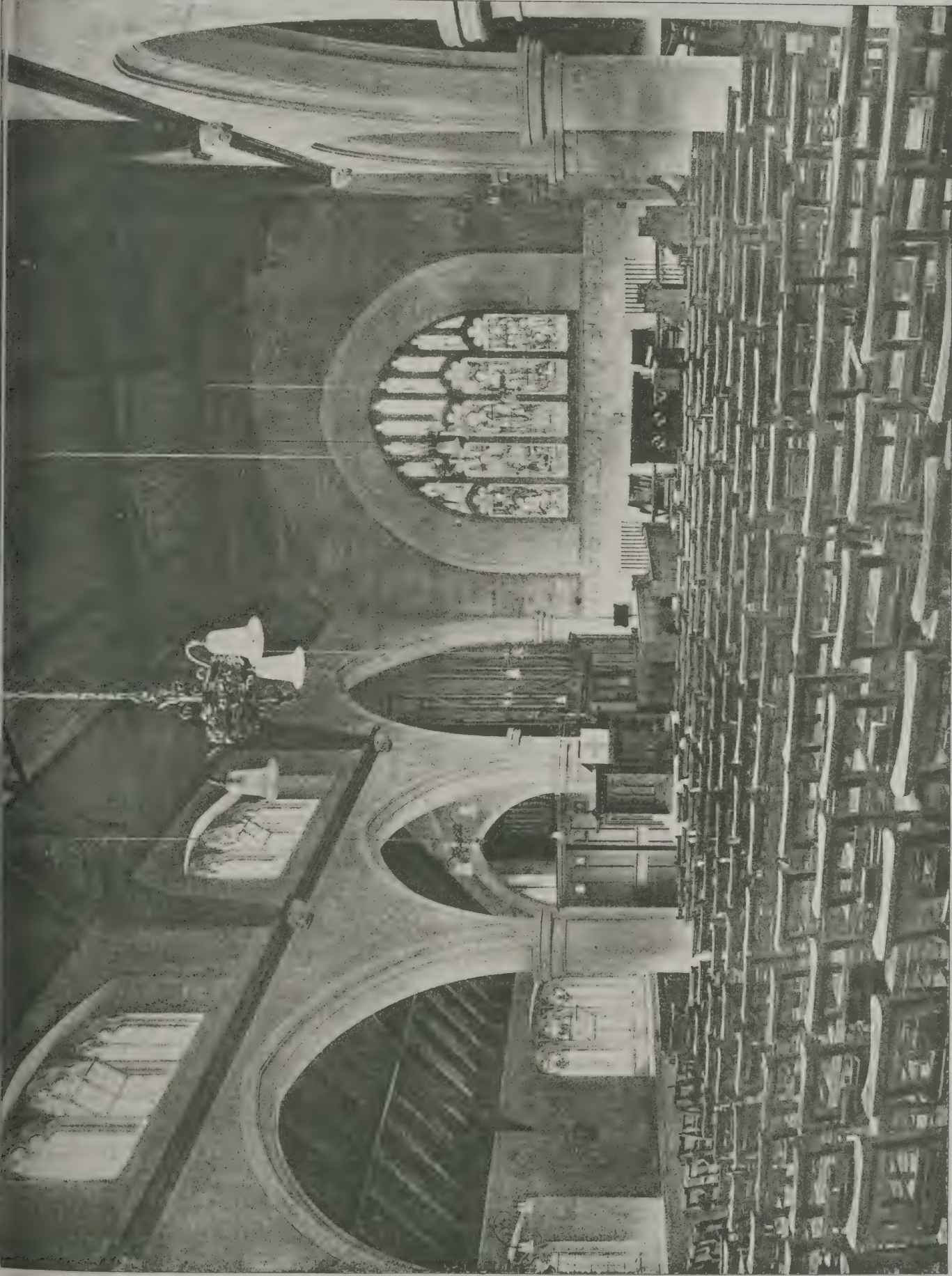
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MELLISH ROAD WESLEYAN CHURCH, WALSALL: EXTERIOR.

Messrs. HICKTON & FARMER, FF.R.I.B.A., Architects.



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MELLISH ROAD WESLEYAN CHURCH, WALSALL: INTERIOR, LOOKING EAST.

Messrs. HICKTON & FARMER. F.F.R.I.B.A., Architects.

The Architect, March 3, 1911.



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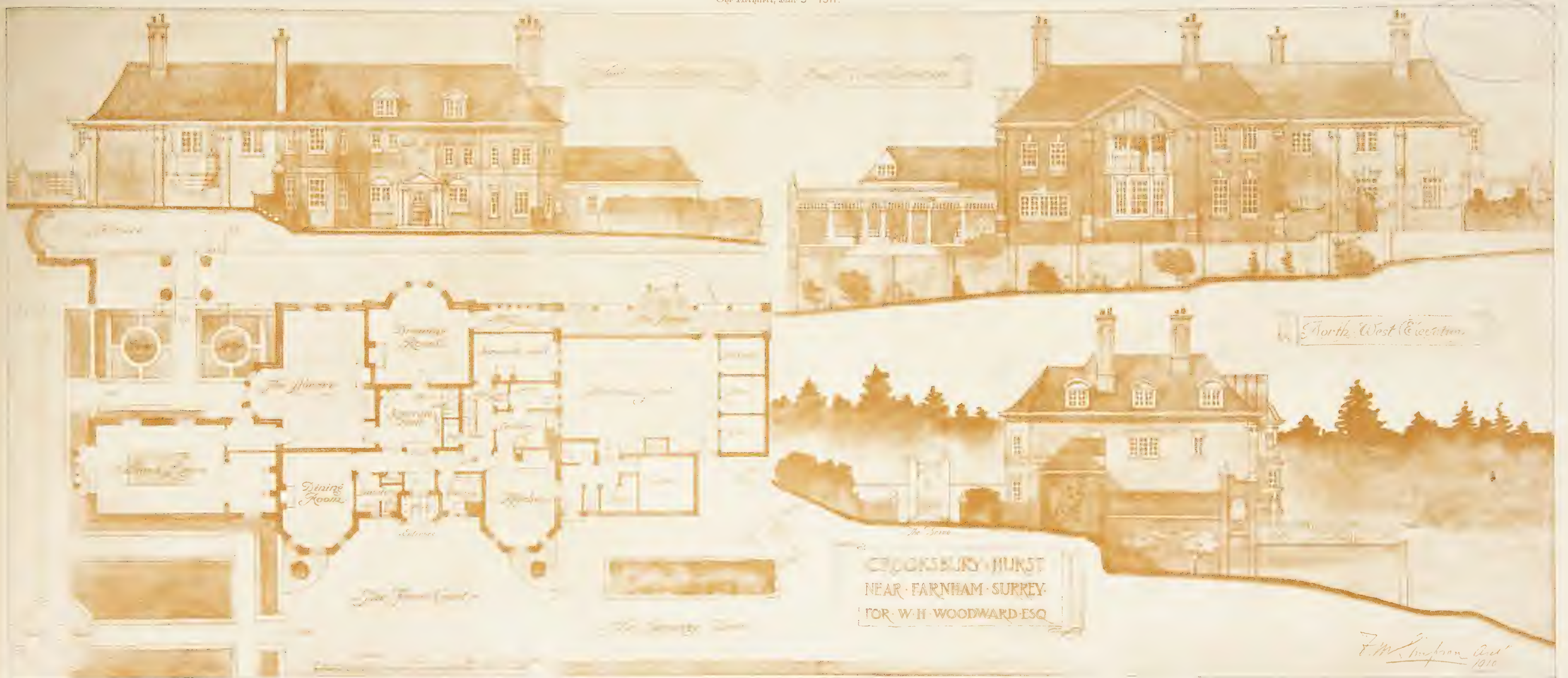


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COST OF SCHOOL BUILDINGS.—II.

COMING to the principal subject of reference to the Committee—the question of reducing the cost of school buildings by the use of materials or methods of construction different from those ordinarily employed at present—we find that consideration was given to various novel materials and methods, which were classified under seven heads:—(1) Steel frame buildings; (2) reinforced brickwork; (3) ferro-concrete buildings; (4) brick buildings with solid nine-inch walls; (5) brick buildings with thin hollow walls; (6) timber frame buildings with slab casing; (7) wooden buildings. In class (1) there were grouped several sub-divisions: (a) with thin solid curtain walls of concrete; (b) with hollow curtain walls of concrete slabs; (c) with curtain walls of brick, hollow or solid; (d) with curtain walls of patent materials; (e) with hollow curtain walls of expanded metal faced with cement and plaster.

The use of steel frame buildings with thin solid curtain walls of concrete, the Committee considered, would reduce the cost of school building by 20 to 25 per cent., but against this must be set the probability of increased cost of maintenance, first by reason of repairs required from the cracking of the concrete filling, and secondly by reason of the greater cost of warming buildings with walls only four inches thick. If hollow curtain walls of concrete slabs were adopted, some of the objections to the solid four-inch walls would be obviated, but the Committee had no evidence as to the increase of cost thereby occasioned.

Steel framework construction with a filling of brickwork appeared to be as economical in general as with thin walls of concrete, the relative cheapness of brick or concrete being dependent on the precise circumstances in any particular case.

Of patent materials used as curtain walls for steel frame buildings the Committee seem to have confined their attention to "Frazzi" blocks and "Fram" slabs, and whilst they express their approval of these articles as regards suitability, they do not give any definite conclusion as to cost other than quoting a claim of the director of the Frazzi Company that his system would effect a saving of about 40 per cent. as compared with brickwork.

Steel frame buildings with a hollow curtain wall of expanded metal faced with cement and plaster proved in a district where brick building is costly to effect a saving of 25 to 30 per cent. in the cost of the walling, but the Committee was not satisfied that this reduction would be maintained where bricks could be obtained at all readily.

With all varieties of steel frame building and thin walls it is pointed out that economy in foundations is rendered possible by the lighter building, and that on an insecure foundation a wall contained in a steel frame is certainly safer than a plain brick wall.

FORTHCOMING EVENTS.

Monday, March 13.

Royal Institute of British Architects: Mr. J. A. Gotch, F.S.A. on "The Burlington-Devonshire Collection of Drawings." Victoria and Albert Museum: Mr. Banister Fletcher on "German Gothic Architecture." (University of London Lectures.)

Tuesday, March 14.

Nottingham Architectural Society: Exhibition of Designs for Urban District Council Offices, and criticism by Mr. F. W. Gregory. Illuminating Engineering Society: Discussion on "School Lighting." British Museum: Mr. Banister Fletcher on "Byzantine Architecture." (University of London lectures.)

Wednesday, March 15.

Carpenters' Company: Mr. W. Bainbridge Reynolds on "Metal Work."

Thursday, March 16.

Carpenters' Company: Mr. M. C. Duchesne on "Woodland Industries."

Reinforced brickwork used in hollow walls of two 4½ inch or 3 inch skins appeared to the Committee to be likely to prove suitable and satisfactory for school purposes, and under some conditions might also be economical, and an example is quoted of an instance in which a building was constructed with reinforced brickwork for 500l., whilst a similar building in 14-inch brickwork cost 900l.

The Committee does not on the whole appear to regard with favour the use of ferro-concrete for school buildings. No case was brought to their notice in which a school has been erected in ferro-concrete, and when alternative estimates have been obtained the cost of a ferro-concrete building has been shown to be higher than that of an ordinary brick building. The expense of shuttering and centring seems to absorb any saving in the material, and the general design of schools, with their large areas of window-space, does not lend itself to economy in ferro-concrete construction. It is suggested that a limited use of ferro-concrete as a substitute for steel on the general principle of a steel-framed building might in some cases prove economical, but it is pointed out that in the use of ferro-concrete great care is required in the planning and skilled supervision in the actual course of construction, the margin of safety in this form of construction being usually small, so that a slight error in calculation or any scamping of the work is proportionately a more serious matter than in older forms of construction.

With regard to brick buildings with solid 9-inch walls, the Committee is of opinion that it does not appear that any great saving would be effected by the adoption of 9-inch in place of 14-inch brick walls, but that a 9-inch wall, if properly supported and suitably treated on the outside with rough-cast, cement, stucco, tile hanging, or other material which will ensure dryness and contribute to warmth inside, might be permitted for school buildings.

Considerable diversity of opinion prevails as regards the suitability for school purposes of 11-inch walls, built with two thicknesses of 4½ inches and a space of about two inches between. Whilst the general opinion is that such walls would be better than 9-inch solid brick walls for retaining warmth and resisting damp, but inferior in constructional strength and objectionable on account of their tendency to transmit sound, these opinions are not universally held.

Timber framed buildings, with slab casing, appear to be sound and comfortable, and although it is not easy to say what saving could be effected by the use of this method of construction for schools under ordinary circumstances, the Committee thinks that it may repay further investigation by local authorities in cases where the necessary materials can be easily obtained.

Wooden buildings, it is stated, will probably prove the most satisfactory and economical for temporary schools,

under ordinary conditions, and the chief objection, the risk of fire, is considered by the Committee to be practically negligible so far as the safety of the scholars in country schools is concerned if the building is on one floor and suitable means of exit to the open air by windows or otherwise from each room are provided. Such buildings are more comfortable and satisfactory than buildings of corrugated iron lined with wood, although they would probably require a larger expenditure for maintenance in painting, &c.

"THE ARCHITECT" STUDENTS' SKETCHING AND MEASURING CLUB.

ALTHOUGH the conditions gave a free choice of a medium between monochrome brushwork, pencil or crayon in the shaded drawing which formed the subject for February, all the contributors have selected pencil, a natural thing perhaps for architectural students to do. Hence there has been a disposition on the part of the majority to follow the diagrammatic method which is particularly characteristic of architects' drawings generally. Too much reliance is placed upon line and too little upon the expression of light and shade by variation of tone upon tone. The line method of drawing carved ornament is useful for sketches that are intended as memoranda only of something seen, or as suggestions for a craftsman who, in his execution of an architect's design, is left with a fairly free hand in his rendering of form and modelling.

Probably from such a sketch no two carvers would produce the same result, as the personal equation of the craftsman would exercise a dominant influence on his interpretation of the design. We are not prepared to say that this is wrong, but the consequence is that the finished work is not entirely the creation of the original designer.

It is very desirable that occasionally architectural students should make careful studies of the rendering of modelled or carved ornaments by the use of tone upon tone, eliminating entirely the use of definite line. This, of course, requires more time than the line or diagram method of drawing, which, it should always be remembered, is no more than a kind of shorthand delineation.

Mr. J. T. PILLING has approached nearest to the tonal method in his drawing of a stone urn from Ebberston Hall, Yorkshire, of which COLIN CAMPBELL was the architect in 1718. Mr. PILLING, in aiming at a brightness that the original can scarcely possess, has falsified some of his tones and there is a lopsidedness in his drawing that must be due either to incorrect draughtsmanship or the selection of an unfortunate point of view of a badly-balanced design.

Mr. E. H. GIBSON sends a drawing of a memorial tablet from the Slingsby monument in Knaresborough Church, Yorkshire, an example of late seventeenth-century work. The drawing is obviously made by artificial light, and the chiaro-scuro is accordingly rather forced. Mr. GIBSON's drawing is, so to speak, a compromise between the line and tone methods, which might have been improved by a little more care in the form of his shading lines so as to suggest the direction of curvature of the surfaces.

"Sans Peur" has selected for his subject a carved newel from the staircase of the seventeenth-century Hospital of the Holy Jesus at Newcastle-upon-Tyne. The finial is in the form of an heraldic lion holding a shield, but the draughtsman has made the mistake of representing it in front elevation. The drawing is lacking in gradation of tone and the values are incorrect. Evidently the author has not given sufficient time to his drawing.

"Plato" gives us an excellent example of a drawing that is frankly of the shorthand type, in which the forms are outlined and the shading is suggestive only of the modelling. The subject is a frame from the tomb of HENRY VII. at Westminster. On the same sheet is also a sketch of part of an iron gate panel of sixteenth-century Italian work. "Plato" also sends a sheet of sketches of carvings of "misereres" or "misericords," as Mr. BOND calls them, from the chapel of New College, Oxford, but

we cannot regard these as examples of Renaissance ornament.

We have decided to divide the prize this month equally between Mr. E. H. GIBSON and "Plato."

NOTES AND COMMENTS.

WE have long held and often expressed the opinion that the maintenance by municipalities and other public authorities of permanent architectural departments is not in the interests of the ratepayers, but it is seldom that actual figures are available. The Establishment Committee of the London County Council have now let the cat out of the bag in their report of February 16 last on the reorganisation of the architect's department as regards the educational architectural work of the Council. The amount provided to be spent on works for the year ending March 31, 1911, is 246,225*l.*; the salaries of the architect's established staff directing that expenditure is 54,196*l.* 4*s.*, or rather over 22 per cent. The Establishment Committee in their reorganisation proposed to increase the salaries of the established staff to 56,434*l.* 4*s.* These salaries do not represent the whole cost of the architectural staff of the Council in respect of schools, and to them must be added the rent of offices and the cost of stationery, no small item in the architectural profession, before we can know how much the ratepayers have to provide for work which would be done cheerfully by architects in independent practice for the customary 5 per cent.

WE regret to receive intelligence, from the columns of the *Manchester Courier*, of the death of Mr. JOHN MERVEN CARRERE, of the firm of CARRERE & HASTINGS, at the early age of 52 years, as the result of a collision between a tramcar and a taxicab in which he was riding. Since the death of Mr. McKIM, about a year ago, Mr. CARRERE has undoubtedly occupied the leading position among the architects of the United States. He was born in Rio de Janeiro in 1858, and after being educated in Switzerland he graduated at the Ecole des Beaux-Arts in Paris. He started in practice in New York as an architect in 1884. Many of the residences in Fifth Avenue are of Mr. CARRERE's design, and he has exercised a very strong influence on the style of domestic architecture in America. His leanings have been towards French work, which is accounted for by his early training. He first came prominently into notice with his design for the New York Cathedral, and in the course of his professional career he has built a number of churches and other public buildings, as well as several big country houses with elaborately laid-out gardens for American magnates, all of which evince ability of a very high order.

THE controversy at Liverpool concerning St. George's Hall and the KING EDWARD Memorial is still raging, and looking at it from the point of view of an outsider we do not think that Professor REILLY, the protagonist of the opposition to Mr. NORMAN SHAW's proposal, has up to now the best of the argument. He relied upon a drawing of Professor COCKERELL's dated 1860, which he stated lay at the Municipal offices. The other side reply that the plan of 1860 was not signed by COCKERELL, that there is no satisfactory evidence that the plan was COCKERELL's, and that when he completed his work at St. George's Hall in 1854 he left steps similar to those which Mr. NORMAN SHAW proposes.

WE are particularly impressed with the apparent weakness of Professor REILLY's case because he strives to bolster it up with the assertion: "So strongly has this objection (i.e. to the steps) been felt that the architectural profession throughout the country, for the first occasion in modern times, has been practically united." This is consummate impudence. The architectural profession throughout the country is too level-headed to take sides in a dispute in which Mr. NORMAN SHAW and Mr. BELCHER on the one hand are opposed in opinion by Sir ASTON WEBB and Mr. REGINALD BLOMFIELD on the other. Nor

is the profession disposed to follow the lead of a couple of comparatively young men like Mr. ADSHEAD and Mr. REILLY, even though they are professors at Liverpool University, and although they may have induced many members of the Council of the Royal Institute to express an adverse opinion on the original scheme, which it is now proposed to amend.

IN *The Connoisseur* for this month are some good illustrations of "Some notable fireplaces," with a short description. The examples are some of them beautiful and some merely curious, but of course do not deal completely with the subject, to do which would fill several volumes. Mr. EGAN-MEW gives us some more examples of Old Lacquer from Japan, another almost inexhaustible subject.

IN a letter to *The Times* Lady CONSTANCE EMMOTT comments with sarcastic severity on the cause of a fire at her house—the insufficient filling-up of a fireplace opening in the fixing of an oak chimney-piece. This is one of the details of house-building which it is practically impossible for anyone to supervise if the actual workman is incompetent, careless, or not conscientious. There are so many details in building that come under this category that it is dreadful to contemplate how much we are at the mercy of the modern workman, who, under the baleful influence of trades-unionism, has eliminated thoroughness and efficiency from the list of qualities that should form part of his character.

THE suitability of architecture to its environment may well be studied in some charming sketches from the Italian Lake district by Major F. A. WILKINSON that appear in the *Art Journal* for this month, which also show how small a part detail may occasionally play in the production of the picturesque. In the same issue Mr. LUTHER HOOPER discourses further on Art in the Church, with illustrations from the Church of St. Albans, Hindhead. The Glamour of Landscape, as illustrated by Italian painters of the early fifteenth century and the Van Eycks, is the subject of an article by Mr. C. LEWIS HIND.

THE series of illustrations of the Oxford Colleges which is in course of publication in *The Architect* is being reproduced in separate form, and the first part, dealing with Merton College, has now been published, with fourteen plates of this one of the most picturesque and charmingly old-world of all the colleges in the University.

JOINERY WORK IN OLD LONDON.*

By Mr. ARTHUR KEEN, F.R.I.B.A., President of the Architectural Association.

(Official Report.)

I FELT a good deal of hesitation in accepting the invitation to give this lecture, because I should be speaking to an audience of carpenters about things that concern their daily calling, but which I only know of from the outside. But the subject is such a wide one and covers such an immense number of features that I felt I might be able to throw some light on it from the side that concerns me more particularly as an architect. In any case, I feel it an honour to be of service in any capacity to a Company that has maintained the tradition of good craftsmanship in this great city of London for some six or seven hundred years.

But looking at the matter in another light, I have to remember that I have learnt many things from carpenters in connection with my own work, and it is only fair to do what little I can in return.

I had the pleasure a while ago of hearing a very able speech by one of His Majesty's Ministers, in which he pointed out that the old apprenticeship method of training was rapidly becoming a thing of the past, and he laid it on architects as a serious charge that they, being most of all interested in maintaining a high standard of work, should see to it that in some other way the young workmen of the

day should have an adequate training. For my own part, to the extent of my ability, I accept the charge, and I am glad of this opportunity of meeting my obligation.

I can tell you nothing that you do not know about the use of your tools, the conversion of timber, the making of glued joints, and the general things of the workshop, but the question of the external appearance of your work—the decorative and artistic side of it—is my concern as well as yours, and it is of this that I am to speak this evening.

There are certain matters in the design of which the English have particularly excelled; lead work is one of them, plaster work is another—but probably in nothing so much as in woodwork are they distinguished from the craftsmen of the countries across the Channel.

In timber-built houses, in wonderful ships, in roofs of churches and halls, in beautiful joinery work, you young men can look back to a tradition that has been maintained for centuries past at a very high level, and in a way that must have commanded the admiration of those best qualified to judge in every time.

I had the opportunity of attending here last summer at the examination for the certificates of this Worshipful Company, and while I came away admiring very much the technical ability that had been acquired by many of the candidates, I was distressed to find how far the knowledge gained seemed to depend on the text books of construction, as if the height of a carpenter's ambition were to know how to frame a queen-post roof or a stud partition, or to form a matched board dado with a skirting and a capping, or to make a pair of French casements that would keep out the wet but would be fit for nothing better than a Margate lodging-house. These things are well enough in their way, but they are only the beginnings of what a carpenter ought to know; they are as it were the learning to write, but afterwards comes the question of what to write. And I look forward with confident hope to the time when you carpenters will be men able to design your work in a capable way as well as to make it so well. I suppose there never was a time when one could get the work itself so well done as now, but all the same the average carpenter knows nothing worth talking about as to the design of his work so as to make it interesting in appearance and comparable with the work of the past.

Now a carpenter ought easily to become a good designer, because he has the stimulus that is given by handling the actual material—a stimulus that is the greatest want of the architect who designs on paper. The material of work offers at once certain possibilities and limitations which are a very material help in design. A mason who was given an odd lot of stones and bricks and flints or pebbles with which to lay the pavement of a court-yard would produce a far more interesting result than if he had made a plan on paper, knowing that he would then be supplied with the material to carry it out.

Mr. Whall considers, quite rightly no doubt, that a great part of the interest in mediæval stained glass windows depends on the fact that glass was costly and every little bit had to be used up. This fact stimulated the designer, and kept his work from getting dull and monotonous.

If you give a mere savage a handful of beads with which to decorate a belt he will proceed to sort them into sizes and shapes and colours until he sees exactly which ones can be used for spots and which for lines and borders, and which for filling up, and he will then work them out into a pattern that will be properly disposed over the surface to be ornamented, and will use up every single bead and will be a beautiful thing when it is done.

I think the design of very much of the old timber work, say in the roofs of churches, depended very much on this kind of limitation and selection. Everyone has wondered at the fact that the roofs of old churches so often fail to fit the divisions of the stonework below them, and it is generally explained by pointing out that they belong to a later date—which always seems to me a very lame and inadequate explanation. I think it is more probably due to the use of particular materials. The roof of St. John's Church at Leeds has the principals spaced quite irrespective of the stone piers and arches below, and yet this church, which was erected about the year 1634, was carried out completely at one time.

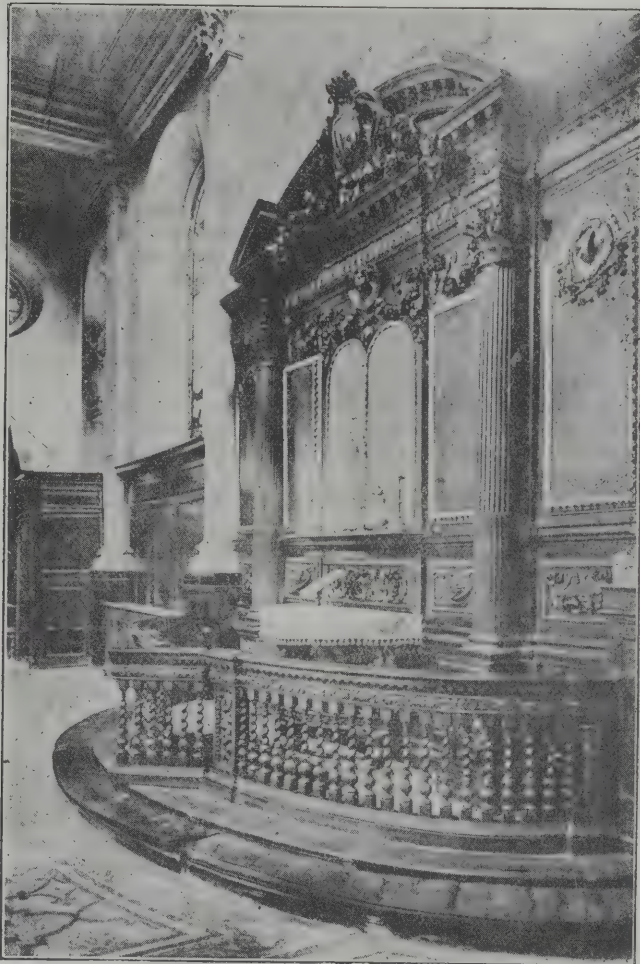
I believe the reason in this case was that the roof is panelled throughout with most beautiful plaster panels which are all of one size and which seem to have been taken as the unit of measurement controlling the divisions of the roof.

In the old days the cutting up of timber was a difficult

* A lecture delivered at Carpenters' Hall on March 1. Sixth of the Series on "The Arts Connected with Building."

and costly matter, and the quantity of suitable stuff available in one place was limited. There would be a certain number of pieces suitable in size and length for tie beams, a certain number that would make good purlins, some suitable for brackets, some that would have done for rafters if they had been longer, but were good for spurs or struts and so forth, and it is easy to see that these considerations would at once settle the kind of roof that could be made, the number of trusses, whether or not there should be smaller trusses between the main ones; how the trusses should be built up, whether the purlins should be near together or far apart, whether they should be strengthened by brackets or not, and so forth. I do not suggest that I am indicating the whole secret of the beauty and interest of an old timber roof, but I am quite sure that a great deal of it depended on the fact that the designer was the man who was handling the stuff and studying to make the most suitable and economical use of every piece.

Of course the great part of the secret lay in the fact that the men who made these wonderful roofs that we see in Suffolk and Somerset and other places had been taught their business as designers and not merely as workmen; they



ALTAR, ST. STEPHEN'S, WALBROOK, LONDON.

worked in the traditional way and did the things that their fathers had taught them with such improvement as their skill and imagination led them to.

If you look in Evelyn's Diary you will find an entry, dated 1668, in which he says:—"Was launched at Deptford that goodly ship the 'Charles.' She is larger than the 'Sovereign,' and carries 110 brass cannon; she was built by old Shish, a plain, honest carpenter, master-builder of this dock; but one who can give very little account of his art by discourse, and is hardly capable of reading. The family have been ship carpenters in this yard about 300 years." Here is probably the finest ship that had ever been built up to that time—a big British man-of-war—built by a plain, honest carpenter who could hardly make shift to write his own name.

It is worth while to go to Greenwich Hospital and see the models of some of these old seventeenth and eighteenth century ships and to marvel, not only at the skill and judgment shown in their construction, but at the beauty of the lines and the charm of the purely ornamental parts. You notice at once the judgment with which the timbers are

spaced to give the greatest strength where most of the strain comes—almost solid wood on the bottom, a reduction of material higher up, and an increase again between wind and water as a special protection at that dangerous point. The timbering of the decks framed everywhere into short lengths so as to give the utmost strength and support to the sides of the ship. The curving in of the upper part of the hull to help to keep the enemy from boarding the ship, and perhaps to reduce the danger from large quantities of water washing into the upper deck in a rough sea. The beautifully moulded curves fore and aft where the bulwarks rise to the upper decks. The wonderfully built out prow from which the bowsprit starts; the keel brought up with a fine curve and continued right out to the very extreme point to carry a carved figure of a king or saint or even of a man on horseback; the picturesque cabins projecting out like bay windows and built up high at the back and covered with curved roofs finished with ornamental lanterns or carved figures. Then the astounding masts and yards built up of innumerable timbers, stayed in every direction and yet with nothing in the way of the free movement of the sails. The contrivances to give the shrouds a direct pull on the main timbers of the hull. From keel to cap everything arranged to have due support itself and to carry the support on to some other part. I suppose that anything more like the structure of a living creature than these old wooden ships was never contrived, and all done by "old Shish, a plain, honest carpenter." It is a thing that is worth some consideration.

I might show you the same thing by taking one of those extraordinary models of Japanese temples or pagodas shown at Shepherd's Bush last summer. Beautiful things with fine curves, good proportions, and well-designed ornament, but a careful examination of them shows that nearly all their beauty arises out of the skilful way in which the timbers are put together to meet the requirements of the building.

Precisely the same thing has obtained in this country, for I never saw here a piece of old building in wood that was not interesting. From the Guildhall at Lavenham to a humble mill or warehouse, our timber buildings show good proportion, beauty of detail, and many other characteristics of good sound architecture.

In every one of the applied arts, the designer who is, or has been, also a practical workman has a very great advantage over the mere studio man, and I am perfectly sure that those of my audience who are accustomed to bench work and carpentry have already taken an important step in the necessary course to make them competent designers of beautiful work.

Now in talking about this to a man whose knowledge and judgment I think highly of, he said: "What is the good of it all? What is it going to lead to? A modern carpenter is little more than a fitter of parts already prepared by machines, and he has less and less opportunity for the exercise of his knowledge and skill. In fact, his only chance of expansion is by becoming something other than a carpenter—say a builder or a joinery manufacturer, or something of that kind." Well, I do not know that it is my concern now to indicate what commercial outlook there is for such skill and knowledge as I would have you acquire, but I may say briefly on that point that I cannot conceive of such skill and knowledge not adding to a man's value in the market. Apart from this consideration, however, is the fact that no craft that man ever put his hand to begins and ends in mere workmanship; there is always an imaginative or intellectual side, full of interest and pleasure, and which is worth a vast amount of study and consideration for its own sake, and the craft of the woodworker possesses this aspect in a most unusual degree. The work of a joiner to-day is dull and uninteresting and very limited in comparison with that of past times, when a man was actively engaged in design and contrivance during the whole time that he was at work. But whether or not you are able to use your knowledge in the course of your daily occupation, you may get infinite pleasure and interest out of the study of fine examples of the work of past generations of carpenters. I believe, however, that you may look forward to far more than this pleasure. If I want a beautiful plaster vault or ceiling, or an artistic piece of metal work, it may be far beyond my power to express on paper what I desire, but I know of many men whom I can visit in their workshops and by discussion of models of what we find there, by sketches, by consideration of odd photographs and so forth, we may arrive at a mutual understanding of what is to be done, and I can leave the matter in their hands knowing that what is done will be a delightful work of art, and that it will meet all the conditions of the case in a satisfactory way. Why should I not be able to

find a worker in wood who will do the same thing for me if I have, say, a few yards of old panelling to be used in a room and to be extended and altered to cover the whole surface of the walls—so that the architraves and pediments, the window-linings and the parquetry shall be harmonious and suitable and that the room when finished shall be a pleasure to all who come into it; so that, if an inscription is to be cut anywhere, the lettering shall be well shaped and spaced, and suitable in character to agree with all the rest? It ought to be quite possible. One of the most interesting things to me in the South Kensington Museum is an oak beam with a long motto carved on it in raised letters that might quite well be done by a clever joiner if he had some sense of beauty and had given some study to the artistic side of his craft.

My friend, of whom I spoke just now, says that what a joiner should aim at acquiring is (a) a thorough knowledge of every detail of construction, including staircasing, dome and shaped roof work, &c., and (b) an artistic knowledge of style of all dates. And he adds that more knowledge of construction and proper balance of design is gained by making working drawings of actual examples than by all the rules, photographs or formulas yet printed. Now here I agree with him entirely, and my purpose in coming here this evening is to show you what there is near to your hand in the square mile of the City lying immediately around this building, or close about it, for your study and profit.

Things nearest to us are often the least noticed, and you may be surprised to find what endless good examples of woodwork there are near here.

It must be mostly in joinery work, because since Crosby Hall is gone, there is little or nothing left in the way of artistic carpentry in the City.

The hall of the Charterhouse shows the kind of roof that succeeded the fully developed open timber roof.

For other open timber roofs built before the Fire of London you may go to Gray's Inn, the Middle Temple Hall, or the Hall at Lambeth.

Carpentry as an artistic craft practically died with the advent of the English Renaissance, as we call it, under Inigo Jones and Wren.

There are many, many churches built by Wren in this city, but not one of them has an open timber roof. So that in this respect I cannot help you much, but I ought to point out that many of these roofs in Wren's churches are marvels of scientific and workmanlike construction as carpentry pure and simple. Not even the tie beams were allowed to show inside the church, and yet these roofs are built successfully over fully pitched vaulted ceilings and domes in a way that calls for the warmest admiration and the most careful study on your part. You may find drawings of many of them in Clayton's great book on the parish churches of Sir Christopher Wren, published in 1849, but the roofs themselves are in existence for you to go to see and to measure and examine for yourselves, and I commend to all of you as a useful exercise to go and find out how the dome of St. Stephen's, Walbrook, is made, for it is only a few inches thick between the plaster inside and the lead outside from base to apex.

The lead covered spires of many of these churches are remarkable pieces of timber construction.

While the English Renaissance in the seventeenth century put an end to artistic carpentry, it gave a tremendous impulse to joinery, not only by the alteration of its character, but by giving it a more responsible position in the treatment of architectural interiors. You probably know very well that in the time of Henry VIII. and Elizabeth English joinery work in staircases, mantel fronts, screens and panelling reached a very high level of excellence both as handiwork and as a matter of artistic handling. But it was accessory to architectural design rather than a part of it. The detail of it was small and complex, and it was used, as Professor Blomfield very correctly points out, in the manner of the tapestry and colour decoration of earlier times, although with admirable skill and truth.

In the seventeenth century a marked change appears; the panelling on walls receives careful consideration as an element in the proportion of the building; doorways and screens present well-marked architectural features, correct in section and proportion, according—as Benvenuto Cellini would have said—to the "rules of art." The organ became a general adjunct of a church, and the case for it offered a remarkable opportunity for the exercise of the joiner's art. The wooden reredos became the accepted feature of the east end of a church. Church galleries became almost universal, and their fronts were another very interesting instance of

skilful treatment in wood. Pews took the place of benches and in many cases they were beautifully carved and panelled.

At the same time staircases took on a very different method of treatment both in construction and design, and through the seventeenth and eighteenth centuries they were important and beautiful features in the artistic treatment of houses and churches.

Now I want to show you how admirably this new aspect of joinery work is exemplified in all directions within a few hundred yards from this building, and if I can induce you to seek out these examples for yourselves and give them careful and patient study, I shall have done you a greater service than perhaps you, at present, realise. You might go and look at the old gates forming the entrance to Staple Inn; they are simple enough, but they are admirably satisfying and suitable for their purpose, and as they have stood well for some 300 years, it will be worth your while to find out how they are made. The diagonal boarding at the back of the panels appears to have acted successfully in preventing the gates from sagging. There are methods of using boarding found in old gates that are little used in the present



ENTRANCE DOOR, CHURCH OF ST. HELEN'S, BISHOPSGATE, LONDON.

day, but are generally sound and good constructionally, interesting in appearance, and well worth noting and remembering.

The gates to the entrance of the Brewers' Hall are good examples of well-designed panelled and carved gates, with wrought-iron cresting on the top of them, and there are a great many gates to the old churches in the City that are well worth studying.

Then there are a good many very nice old doorways near here with columns or pilasters and pediments in various forms, and in some cases with elaborately carved brackets and shell canopies. I might show you a large number of them if I were not confining myself as much as possible to existing examples, for unhappily many have been removed or destroyed even within my memory—an additional reason for making careful drawings of the remaining ones while they do remain.

At No. 25 Crutched Friars is a doorway that for a simple, homely piece of Classic detail is one of the most delightful examples that I know of. You will find, if you make a measured drawing, that the design of it will fix itself on your memory so well that you could redraw it from memory quite a long while afterwards, and you will learn, a great

deal at the same time about the uses and forms of mouldings and carved capitals and a good many other things.

Before leaving the subject of doorways, however, there are others that are worth notice, to be found in many places—mostly in retired nooks and corners and unfrequented back streets.

One at No. 33 Mark Lane—in an inner courtyard—is a particularly rich and beautifully detailed one, executed about 1690. It must be a remarkable specimen of the joiner's art to hold together so well for 200 years, in spite of being built up of a multitude of separate pieces. It would seem very likely that Grinling Gibbons was concerned in the carving of this doorway, for the cherubs' heads are quite in the character of his work and very much like those in St. Paul's.

The whole house is an interesting piece of domestic architecture. The front is a fine example of design in brickwork, and there is a back entrance door that was probably as fine as this front one, originally, if one may judge by the portions that remain, but the pediment is gone. At the rear of the building there is an unusually elaborate wooden eaves cornice with large carved modillions and rich mouldings. And there is also a very richly carved attic cornice that is a model of good scale and proportion.

The staircase is a well-known example, and is, I think, the best of its kind that I have seen. There is a very great deal of inlaid work; the very treads and landings are inlaid in patterns, as are also the panels of the dado and other portions. In one respect the treatment of the stairs is very unusual. The end of each tread forms an oblong block



DOORHEAD, 6 FEATHERSTONE BUILDINGS, LONDON.
From a Photograph by Mr. F. R. TAYLOR.

ornamented with vertical bands of inlay and the usual carved scroll, which in this case is very beautifully carved, occurs under the oblong block at the end of the next step, with the moulded nosing running along to form a cap to it. There are most remarkable diversities in the carved and twisted balusters, and I think some of them must be due to alterations made from time to time when broken balusters were reinstated. There is a fine carved and fluted doorway in the staircase hall, and there is also standing in a corner a big leaden female figure that once formed an ornament in the garden of the house.

There are a great many other old doorways to be found, and generally of very good detail. The well-known one at St. Helen's Church belonging to the Jacobean time. A doorway, now destroyed, at Queenhill, was a very sound example. A simple one, but still well detailed, stands at 4 College Hill. One at 6 Featherstone Buildings is of very common type, but of exceedingly beautiful design, and as it combines a hood with a doorway it is a very sound example.

Then there are the two remarkable doorways in Laurence Pountney Hill—too richly detailed to be as effective as they should be, but showing a good treatment of a big carved wave moulding up the jambs.

The interior doorway in Sir Christopher Wren's house in

Love Lane—lately pulled down—was quite a well-designed piece of simple detail. The exterior doorway of this house, which had a boldly projecting cove over it, was another instance of a very good effect obtained by very simple treatment. It was approached sideways by a small flight of steps—always a picturesque treatment of an entrance. A staircase to be found at the Charterhouse may be looked at at the same time.

I am not prepared to say that all the examples you will find are sound and satisfactory as examples of design in woodwork. I feel a good deal of hesitation in accepting some examples which are quite delightful in form, because they possess characteristics that do not agree with the material they are made of. The art of the woodworker has been open to this criticism from very early times, and I think more in Gothic times than in the centuries of the Renaissance. The reason for it is, of course, that stone-masons have taken the lead and carpenters have tried to imitate in wood the forms that are suitable only for such a material as stone. So that we find arches and tracery, buttresses and even flying buttresses, pinnacles and other features that are sound and right when formed of stone, but quite unsuitable for wood. This defect is seen more in early Gothic woodwork than in late, and even in early work it is generally associated with such beautiful carving that the weakness of it is easily pardoned.

The wonderful canopied stalls at Winchester, dating from the fourteenth century, show what I am speaking of, and it has occurred to me to contrast them with a piece of modern work at Westminster Cathedral designed by Mr. J. A. Marshall, which seems to me to show a very right method of treatment.

Of course tracery is quite right in woodwork when it is merely a pierced pattern cut out in a board and suggested by, but not imitative of, the stone windows and other tracery about it, but when it is treated with curved moulded ribs and with shafts provided with capitals and bases it is wrong in principle and can never be really satisfying in appearance.

There are many forms that are just as suitable to wood as to stone, and therefore properly decorative—as, for instance, the sunk joints often seen in old weather boarding. These were probably derived from stone rusticated joints, but they are constructionally right in wood because they serve to keep water from getting into the tongued joints.

Some of the best joinery work to be seen anywhere is to be found in the Halls of the City Companies—buildings full of character and charm, but comparatively little known except to the chosen few who are privileged to be members of the Companies or guests at their entertainments. They are hidden away in back lying places, but all of them are interesting and full of characteristic charm, and they are not difficult to gain admission to for inspection of their halls and court rooms.

One of the less known of the City Companies' Halls is that of the Stationers' Company behind St. Martin's, Ludgate Hill. A quaint old-world place in its external appearance and full of old associations. The Company used to hold the monopoly of printing the Bible, and the Bible is carved in many places on the fireplaces and other fittings; in fact, the arms of the Company consist of the Bible, the Glory, and the Dove, with the motto "Verbum Domini manet in eternum," and I believe that every apprentice bound at the Hall still receives a Bible and Prayer Book from the Company according to ancient usage.

The garden on the west of the Hall is the place where heretical books seized by the ecclesiastical authorities used to be burnt. Many of the meetings of the Revisers, when the Authorised Version of the Bible was compiled in the seventeenth century, were held at Stationers' Hall. The building possesses some of the most interesting joinery work of the seventeenth century that is to be seen in London, or, for that matter, anywhere else. Screen, panelling, fireplaces, doors, all carried out at the same time—in 1671—a few years after the Fire.

The woodwork in the Hall and Stockroom was made by Stephen College, "the Protestant Joiner" (in 1671), who, ten years later, was tried for sedition and hanged at Oxford.

"Brave College is hanged, the chief of our hopes,
For putting down Bishops and making new Popes."

The Stockroom was enlarged in 1887, but all the old panelling was re-used. The chairs in the Hall, made by Chippendale for the Company, are a very fine set.

Another Hall which is full of beautiful joinery work, is that of the Brewers' Company in Addle Street. The whole building is full of charm and old-world flavour. A fine

gateway entrance from the street with a great coat-of-arms over the door; a large old-fashioned court-yard with an external stone staircase leading up to the Hall on the upper floor.

The Hall screen is so curiously reminiscent of the one at Stationers' Hall that the same man must surely have been concerned with it, and as the dates of both are within a year or two of each other, this may quite probably be the case, although I believe someone named Wm. Whiteing was the person who actually received payment for it from the Company, or at any rate, for the work in the Court Room. There is a fine old inlaid table in the Hall that formerly belonged to the State Barge of the Company and a beautiful lead cistern in the kitchen. The Court Room has a very fine carved and inscribed fireplace, and most excellent panelling—more architectural in its design than is usual. There are carved divisions between the wide panels forming a kind of pilasters, and extremely well managed at the top so as to form an effective finish to the carving.

There are many other Halls that are well worth a visit and careful study—in fact, they form a most remarkable series of buildings, and are full of interesting pictures, wonderful plate, good furniture, and fine old embroidered hearse cloths.

If Sir Christopher Wren's remarkable plan for rebuilding London had been carried out, these Halls would have been placed as isolated buildings along a great quay by the side of the river, and they would have had an uncommonly fine appearance there.

Undoubtedly, however, the finest joinery work of all is to be found in the churches, and here it will be seen how important a part it played in the architectural design; it forms the gallery fronts, the wall panelling, the casing of the piers and bases, the reredoses, the great pulpits which are always such a point of interest in Renaissance churches; the entrance screens, the organ cases, the font covers, the pews: all are of oak and quite commonly of very rich and beautiful detail.

Such a thing, for instance, as the font cover at St. Stephen's, Walbrook, with its charmingly designed little wooden figures at the eight angles, is a perfect jewel of refined and delicate work in wood. Or the one at St. Nicholas Cole Abbey.

Font covers in all periods are among the best pieces of ornamental work in our churches, but it would not be easy to find any more skilfully designed than these. Is it not worth while to spend a Saturday afternoon or two in making carefully studied drawings of such things and learning something of the secret of their beauty?

The magnificent choir stalls and bishop's throne at St. Paul's, together with the organ and much else in the way of woodwork there, are beyond the scope of my present subject; they are among the finest things of their class in all Europe; we will glance at them and pass on to other matters more within our compass.

There are a great many fine organ cases in the churches of this City—in fact, very few that are not fine and interesting. One hardly knows whether to give one's attention more to the design of them or to the execution of the work. Both are admirable. The great rounded or pointed pediments and cornices, the brackets or corbels under the projecting turrets, the beautiful bands of pierced carving—but, above all, the fine proportion and the well-balanced composition of the various parts—all combine to make these organ fronts a most remarkable collection. They are very distinctive of this City and they are works that the City may well be proud to possess.

One of the finest is that at St. Lawrence Jewry, the church which is the official "parish church" of the Lord Mayor, and which possesses some of the most elaborate woodwork in London, but many others are very large and of fine proportion and beauty of detail, St. Stephen's, for instance, or St. Bride's, in both cases forming practically the west end of the church. These organs are in most cases at the west end, in the gallery over the entrance lobby, but sometimes they are found standing free on the floor of the church—never boxed in—in an organ chamber.

There are very few things in a church that give better opportunity for the exercise of design in connection with joinery work than an organ case, and as the actual construction of the woodwork from the workman's point of view is complex and interesting, I commend these organs to you for careful study.

There is another fine one at St. Nicholas Cole Abbey, which comes in as part of the general design of the west end with the doorways and other features.

Closely connected with the organ fronts are the vestibule screens that are found in most of the larger churches, and they are generally very well treated; sometimes they have fine fluted columns with well carved caps; sometimes there are iron standards connected with them (St. Clement's, Eastcheap). The doors in them have fine pediments over them; there are often coats of arms or panels giving the names of benefactors of the church or parish, and the glass sashes have the bars arranged in patterns. Often there are



CABINET IN HALL OF THE STATIONERS' COMPANY.

richly carved pews attached to the screens. There is a good example at St. Mary-at-Hill, by Billingsgate Market, where practically all the woodwork in the church is of a fine description.

The screen has carved posts projecting from it to carry the gallery, in which is a fine organ case. The gallery front itself is elaborately carved with rich panels and coats of arms. Some of the most beautiful iron sword-rests in the City are here, and the pulpit is of quite uncommon richness and completed with a fine staircase up to it, and an elaborate canopy. Balancing the pulpit, on the other side is a rounded reading-desk—again with a good stair up to it, furnished with carved handrails and twisted balusters.

There is a finely designed reredos of very large size and altogether more architectural in character than many others—well composed and large in scale—with very fine Corinthian columns, and the altar rail is of beautiful design, with wide carved standards and twisted balusters. The font cover is small, but well-designed, and the whole of the architectural treatment of the church is interesting and sound.

Even the smell of fish that pervades the church from the neighbouring market cannot destroy one's pleasure in the beauty of the building and its furniture. The bracket clock that projects from the east end of the church, high up and standing out boldly on a carved beam and pierced strut, is very well known, and is a fine model for a clock in almost any position, except where the L.C.C. imposes its idiotic limit of five feet in projection.

Close by this church is the old Gothic church of All Hallows Barking, which happily escaped the Fire of London, and which is full of charming seventeenth and eighteenth century woodwork. The carved pews at the west end with their pierced panels are a very striking feature. They are raised above the others and the backs are carried up to a great height to shut off the draught from the vestibule.

The same kind of pierced panelling runs across at the east end to form a kind of chancel screen, and it has thin, boldly projecting buttresses standing out at intervals to stiffen it. These have carved scroll tops of a very good pattern, and the screen forms a very interesting feature in the church. The pulpit and its great sounding-board are quite of the best kind, and the organ case, probably later in date than the other fittings, is very elaborately carved on the brackets and the cross fillings that enclose the pipes. These are in the characteristic pierced work, but on the curved cornice or pediment above are two large recumbent figures bearing musical instruments. There are square and round turrets of pipes, finished with fine, bold cornices, and the whole thing is a superb example of the joiner's art. There is a fine bold reredos, good in general effect and beautifully detailed throughout; the small panels, containing the Creed and Lord's Prayer, are charming pieces of detail. There is a most wonderful font cover and a good staircase to the gallery with thick, comfortable-looking balusters.

At St. Margaret Pattens, close to this church, there are two interesting raised pews adjoining the vestibule screen; not only are they richly carved, but they are furnished with flat canopies standing on brass standards, and giving them a very quaint and interesting appearance, and of course making them look very important. This church has a very fine oak reredos with gilded mouldings and carving.

Another good example of a vestibule screen is found in the charming little church of St. Mildred, Bread Street—a church which, like the last, is beautifully detailed. The woodwork and plaster work are most interesting, but there is also some good metal work, including a very fine brass chandelier.

There are only two of Sir Christopher Wren's churches that have chancel screens after the fashion adopted in Gothic churches, but one of them is a remarkably interesting specimen. It is now in St. Margaret's, Lothbury, but it originally belonged to All Hallows, Thames Street, and was presented to that church by Jacob Jacobsen, of Hamburg, probably a descendant of the German merchants who, under charter, formerly lived in that parish. At any rate, the eagle over the central opening is the emblem of the Hanseatic League, so that the giver of the screen evidently wanted to mark the connection of the church with the Hansa Union.

A very curious detail in this screen is the double spiral forming the mullions of it—a thing common enough in old candlesticks, but I do not know of any other example of its use on a large scale.

The other church with a chancel screen is St. Peter's, Cornhill, and here again the detail of the work is good, but not so uncommon as in the last instance.

While we are at the east end of the churches we may look at one or two reredoses, and in these, as in the organ fronts, we find extremely elaborate detail and often very fine workmanship.

Examples are at St. Martin's Church on Ludgate Hill, at St. Anne and St. Agnes, Gresham Street, and at St. Nicholas Cole Abbey.

In many of these reredoses there are good instances of the use of gold in decorating woodwork. Here in the City it is most valuable by reason of the prevailing gloom which makes it difficult to see the detail of the oak work in the present day. If it is used with judgment, sufficiently distributed, and yet not so slight as to be showy and vulgar, it helps the design very materially and gives it character and

quality. In some of the churches gold is used on the plaster work of the ceiling with most admirable effect, particularly, perhaps, in the case of St. Bride's Church—but there are other cases where it is merely tawdry and meretricious.

We might spend a long time in looking at all the woodwork that these City churches of ours possess in such profusion, but we will glance at a few of them without stopping for much description.

At St. Andrew's Wardrobe there are a fine west organ and a good gallery front and pews. St. Mildred's is a beautiful little church in which practically everything from the plate and the chandelier up to the vaulting and dome is charming, but the joinery work is particularly well designed and well made.

St. Nicholas', carving; St. Stephen's, carving; Christ Church, Newgate, carving. There are some big carved panels in this church that are, I believe, by Grinling Gibbons. They are very much like his work in the altar rails at Winchester. There is also a very beautiful litany desk. Good examples of panelling, internal doors, chimney pieces, and other fittings are to be found in abundance—many of them in the churches, many that I have not referred to in the halls of the companies, and many in offices and warehouses that were once private houses.

The vestry of St. Lawrence Jewry has some of the most costly and elaborate work of this kind to be found in this country. Not only is the carving so fine, but the framing and the mouldings are among the best examples in existence. The modelled work of the ceiling, too, is very good, and the painted decoration of the flat part of the ceiling is an excellent example of the class of work prevalent in the time of the Stuarts.

A few slides showing the woodwork in a house lately destroyed in Hatton Garden will illustrate very well the doors and other fittings that are characteristic of the work in London, and anyone who wants to measure such work can find in the South Kensington Museum the entire lining of a very fine room taken from Clifford's Inn. It is of the very best type of detail, and of course easily accessible.

The fireplace in the cedar room at the Skinners' Hall in Dowgate Hill is a very remarkable example. This room, or at any rate the wood for it, was provided by the old East India Company in recognition of the joint use they made of the hall. A good deal of gilding has been used with good effect, and some of the more elaborate carved work is done in mahogany. There is a great deal more of beautiful woodwork in this building, a fine oak staircase with balustrades on both sides; two or three well panelled rooms and another particularly fine fireplace. There are also four very good lead cisterns ornamented with figures representing the seasons.

I have two or three odd slides that you may care to see, although I have not time to allude to them in detail.

I might go on for a long while showing you pictures, but we have had enough for the present purpose. What I wanted to bring home to you was the extreme beauty of the woodwork to be found immediately around this spot; the great pleasure, and probably profit, to be gained by designing as well as making such things as I have shown you, and at any rate the great desirability of men who follow the craft of the woodworker making a close and careful study of such works as these. It is best done by measuring and drawing them to scale, and while you make a correct record of what is before you, you will be learning a good deal about how to design such work for yourselves, and to be far more useful to your generation than carpenters alone. You are already good workmen, but I hope you will become good craftsmen with a thorough knowledge of your trade, apt at arrangement and contrivance, and worthy followers of "Old Shish" who built the great ship in Charles II.'s reign.

ILLUSTRATIONS.

ORIENT LINE S.S. "ORVIETO."

WE this week have the pleasure of publishing views of another steamship which has been fitted up from the designs of Mr. A. N. Prentice, F.R.I.B.A., the "Orvioto" of the Orient Line.

COMPETITION DESIGN FOR THE USHER HALL, EDINBURGH.

WE illustrate the perspective view of the design submitted in the Usher Hall competition by Mr. Arthur J. Gale, F.R.I.B.A.

MOOR COT, BEN RHYDDING.

THIS is an architect's home, the house having been designed by Mr. W. H. Marten for his own occupation.

THE ARCHITECTURAL ASSOCIATION.

A MEETING of the Architectural Association was held on Monday last at Tufton Street, Mr. Arthur Keen, resident, in the chair. The election took place of Mr. J. W. Brown, Bloomsbury Square, W.C., and Mr. E. H. Smith, New Southgate, N. The Hon. Secretary announced that the Fourth Spring Visit will take place on Saturday, March 18, when members are to meet at the offices of the General Accident Fire and Life Assurance Co., Aldwych (Mr. J. J. Burnet, architect). It was also announced that members' smoking evening has been arranged for March 24. A collection of drawings executed by English students in French ateliers and in l'Ecole des Beaux-Arts will be on exhibition.

Mr. A. R. Jemmett then read the following paper, entitled:

The Functional Application of the Orders to Modern Buildings.

Mr. President and Gentlemen,—The subject on which I have the honour to address you this evening is not one that I would have ventured to have chosen for myself, for it provides too many opportunities for so ill-informed a person as myself to give himself away most completely.

I should have thought that, as this subject has a certain scholastic or academic flavour, it might have been better handled by someone who has had the advantage of our recently-improved system of education, or by one associated with the initiation or carrying out of that system, or, failing either of these, by the person who is responsible for suggesting the title. As, however, the duty has fallen on me, I will do the best I can, hoping that the discussion will bring out ideas and information of more permanent value from those better qualified to speak.

On thinking over the wording of the title—"The Functional Application of the Orders to Modern Buildings"—it seemed evident to me that the accent should be placed on the word "functional"—the application of the Orders in such a way as to fulfil a function.

Now, Sir, we are all aware that some people may question the legitimacy of the whole proceeding; may contend, with much show of reason, that you cannot rationally apply the Orders to modern buildings—whether functionally or otherwise—particularly in this country, where Classic architecture is only an imported plant. Such people may well hold that the Orders, as perfected by the Greeks, were a natural production of the time and circumstance; that they were suitable to that time and those circumstances only; that they were applied by the Romans indiscriminately and without any real understanding—sometimes rationally, sometimes irrationally; that where they applied them functionally it was as much a matter of accident as of design; that the same remarks apply to the period of the Renaissance, which, as a matter of fact, was a fundamental mistake turning architecture from the true path of progress and keeping it there ever since.

This is a point of view for which I have the greatest respect, but it is not the subject for discussion this evening. Obviously, also, it would be most inconvenient to admit it here, as the admission would bring this inquiry to an abrupt termination. I will merely refer those who hold it to the dictum attributed to M. Duc, Grand Prix de Rome, and architect of the Salle des Pas Perdus of the Palais de Justice at Paris: "There is no architecture without the Orders"—just to remind them of another point of view, and leave them to make what they can of it.

It seems necessary for our purpose to consider Classic architecture as much an acclimatised or naturalised citizen as a Lombardy poplar, a French partridge, or a Jersey cow; as much a home product as a Brussels carpet or a French casement; and to grant the legitimacy of the application of the Orders, provided they are applied in such a way as to perform a function. What are these functions? And how may the Orders be best applied so as to fulfil them? These seem to be the questions before us to-night.

It is, I suppose, the orthodox standpoint that, as architecture is a structural art, the chief function of each individual feature is a structural one. It is, I believe, contended that no feature has a right to exist except in discharge of some structural necessity, and that its value as architecture depends on the degree of success with which it exactly fulfils that function.

Far be it from me to deny this, but I venture to suggest it is true only as far as it goes. The truth perhaps, but not the whole truth.

If we consider for a moment the use of the Orders as elaborated by the Romans, and again by the later Italians,

we must admit that they often applied them in a way that was not strictly structural—as, for instance, in the Coliseum, with its concrete structure faced with superimposed tiers of applied Orders in stone—or in any colonnade with its intercolumniation too wide for the depth of its architrave.

Here we get features which are not exactly structural. The architrave, for instance, does not bear as a lintel from column to column as it would have us believe, but either includes the frieze in the same stone to get depth for the bearing, or else is jointed like an arch. When we remember that such features are to be found in most of the buildings since the time of the Greeks, where the Orders have been applied, we realise that, if we are to adopt the standpoint that the function of every feature is structural and structural only—if we take a strict view and refuse to admit any feature that is not an absolute structural necessity—it is evident that our use of the Orders will be extremely limited, and that there is very little scope for their application to modern buildings.

I would venture, then, to put forward the point of view that, although the chief function of every feature may be structural, yet it may perform other functions equally necessary to the completion of the building as a work of art. For we must remember that the structure of a building has not only to serve a practical purpose, but also to express that purpose in its general appearance. That although this purpose may be—indeed must be—to some extent expressed in the general lay-out and grouping of its structural masses, yet this expression is not complete. These masses have to be shaped, modelled, and decorated, to draw out, heighten, and complete that expression. For although the general arrangement and structure of the building may, after examination and critical analysis, prove satisfactory to the mind, yet it has to appeal through the heart to those not capable of this analysis; and to those who are capable it has to make its appeal with a swiftness that does not allow time for conscious analysis—an instantaneous, instinctive, emotional appeal which subsequent critical analysis should only confirm.

If this be so, then the features employed in this process of drawing out and accentuating the expression already inherent in the general lay-out and structural grouping, to obtain this instantaneous emotional appeal, are performing a function, not altogether structural perhaps, but none the less necessary. If we use the Orders for this purpose we may, I think, be said to be applying them functionally. It is in this way that they were used by the Romans and the architects of the Renaissance.

If we endeavour to elaborate and illustrate this point of view we perceive that the Orders may be applied in many ways, all more or less functional; that it is possible for an Order to fulfil a structural function without necessarily fulfilling an expressive one; or an expressive but not a functional one, or both, or neither, and that their value varies accordingly.

For example, the main entrance to a large public building may need a porch or outside shelter, and for this purpose an open portico with columns and pediment may be erected. Here the Order may be so constructed as to fulfil its structural function, while at the same time the whole portico may serve to express and accentuate the entrance, and this expression may be more exactly obtained by the treatment of the detail and decoration of the Order in harmony with the purpose and character of the building.

In this case the Order seems to serve the functions both of structure and expression, but if the same portico is taken from the entrance and placed at random against some other part of the building where it serves no practical purpose, the Order, no doubt, may still be so constructed as to serve its structural function of supporting its own roof, but it no longer fulfils the function of expressing the arrangement and purpose of the building. In fact, it has become a misleading feature, confusing the expression, however structurally perfect it might be in itself.

Again, we all know the usual arrangement of a small group of municipal offices. Offices on the ground floor with a central entrance, Council-chamber on the first floor over the entrance, with smaller committee-rooms on either side. Where the Council-chamber and committee-rooms are given a height in proportion to their relative sizes, we get a structure which by its arrangement and its general grouping and outline expresses up to a certain point, simply by these means, the character and nature of the building.

If, then, it is proposed to intensify and complete this expression by the application of an Order to the Council-chamber, and perhaps a secondary one to the committee-rooms forming the wings, so as to emphasise the fact that

these are the important rooms, the Orders seem to perform a function of expression, and therefore to be legitimate, even though they are not required structurally. If, however, the actual columns or pilasters are not just applied to a wall already sufficiently strong, but form part of the wall itself, and are actually necessary for the support of the roof, being so spaced as to take the roof principals, they seem to perform a structural function also, and have a greater value still as a means of expression, for they tell us more of the nature of the building. Arranged irrespective of the construction they tell us something, and so have a certain value; arranged to express the construction, they tell us more, and so have a greater value.

But the point I wish to emphasise is that even if they perform no actual structural function they may be used as means of expression in places where they are not a structural necessity provided they are used in conformity with the laws of architectural expression.

This seems to be the important point. The first thing necessary is to put the Order in its right place in the composition, where it expresses the right thing. If it is also structurally applied, so much the better, but this is a secondary consideration. An Order performing a structural function applied in the wrong place, where it emphasises the wrong thing, confuses the expression of the building as a whole, and is worse than useless. In such a case its structural application does not interest us much. If on approaching a public museum we see a grand portico with pediment, and, taking this for the main entrance, we mount the flight of steps only to find ourselves confronted with a blank wall, or with a small door marked "Private" leading to the offices, it is no comfort to us to reflect that the Order has been applied to fulfil the structural function of carrying its own roof. As we wander round the building in search of the entrance we are in no mood to admire its structural perfection. All we feel is that we have been taken in shamefully, and that we want the front door. Later on we may find time to reflect that even structural perfection itself is no good in the wrong place, and that the whole thing is a false idea and just a waste of so much good stone and honest craftsmanship.

The use of the colossal Order rising through two or more floors, a treatment which is just now so popular, is rather a difficult matter to handle. You can look at it in so many ways. As a method of expression it looks utterly false at first glance, but, after all, there is something in it. There are other things to express besides the obvious physical fact that the building is divided into several storeys.

Suppose you have to supply an acre of accommodation for some commercial purpose, the whole of the accommodation being of the same character throughout; and suppose the most convenient way would be to arrange it all on one floor. If the site is large enough you would do this, but if it is only a third of an acre you have to divide it into three and place three floors one over the other.

Now you do not do this because it makes a better or more convenient arrangement; quite the contrary. You do not do it because you want to, but because you have to. It is not the strong point, but the weak point of the design; you therefore do not want to say too much about it. It is a fact to be frankly recognised but not unduly emphasised; you do not want to make a song about it. If, then, instead of emphasising each floor with a small Order you include them all in one large one and express the floors with the windows and other subordinate features, you get obvious facts frankly recognised without undue emphasis, while the large Order, by its scale and treatment, seems to convey a truer suggestion of the unity of the building as a whole, and the nature and relative importance of the commercial concern of which it is the expression.

If, however, the three-floor treatment is a vital necessity of the arrangement—a characteristic feature of this class of building—it would then be proper to duly emphasise the fact by boldly marking the three floors. To do this with an Order for each floor would perhaps be logical, but as a method of expression it seems rather crude and a needless elaboration of the obvious.

If we use this large Order, let us take care that we mean something by it, that it is suggested by the nature of the building, and not by the present tendency to bigness of scale. Rightly used, it seems to be a most flexible medium by which we can draw out from the building the most subtle shades of expression; wrongly used, nothing can be more misleading or better adapted for confusing expression.

Imagine a building of four storeys all of the same character and importance, where there is no reason for accentuating one rather than another. To treat the ground floor

as a basement to an Order rising through the first and second, and then to put the third in the attic, may produce a pleasing but most misleading effect. But if the different floors have each a separate and distinct character—say the different departments of a Government office—and there is something in the nature of the first and second to suggest that they be coupled together and emphasised, there seems no reason why this should not be done with an Order.

There are many other points, such as the expression by means of a large Order of a hall set back from the front and masked by several floors of small rooms, which it would be interesting to examine if the time at our disposal permitted.

As this paper is not intended to be a study in architectural expression, I will content myself with the suggestion that the principal value of the application of the Orders to modern buildings, taking into consideration our rapidly changing methods of construction and complicated practical requirements, is chiefly as a means of artistic expression; that used in this way they fulfil a function.

The principle that seems to guide us in their application is that they must in all cases obey the laws of architectural expression, and that a right method of expression is the essential thing. If in so doing they can also fulfil a structural function so much the better, as the expression becomes more complete. They cannot, however, be applied to serve a structural function in defiance of the laws of expression—for the expression, not the construction, is the essential thing.

Perfection of mechanical structure is satisfying only to the mechanic. If it satisfies us, why use the Orders at all? The expression inherent in the structural masses of the building, before the Orders were applied, should be sufficient.

After all what is it we would be at? We are artists, not mechanics. Our aim is not perfection of structure, but perfection of expression. We may need one to obtain the other, but if we strive for perfection of structure it is not for its own sake, but simply as a means to perfection of expression.

I am well aware that in recognising the application of the Orders as an added decoration not structurally required I have laid myself open to the charge of holding the now discredited theory that building and architecture are separate things—that architecture is the decoration you apply to a building, or, as I have lately seen it expressed building + ornament = architecture.

If I repudiate the suggestion now it is not so much from the desire to forestall criticism as to direct the discussion to more profitable issues.

But, after all there is something in this point of view—there generally is in every point of view—even, I trust, in mine. To me this old, unhappy, far-off heresy, which I treated to-day with so much contempt by our superior persons, was but a superficial way of expressing a partially comprehended truth.

The artistic expression that is inherent in the lay-out and grouping of the structure not being recognised or understood it was natural that the whole of the expression in the finished building should be thought to be entirely due to the shaping or decorating of the structure which takes place when we proceed to intensify and complete an otherwise imperfect expression. The Orders which we may happen to use for this purpose are not in themselves the architecture. They do not create the artistic effect, they only serve to perfect it, and in so doing they seem to me to fulfil a function.

The following notes by Mr. R. Phené Spiers on Mr. A. R. Jemmett's paper were then read:—

The subject which was suggested to Mr. Jemmett to take up is much too vast to be discussed properly in one evening, and I propose to take up two points only in this paper. Firstly the dictum attributed to Monsieur Louis Duc, "There is no architect without the Orders." I do not know where he said it or what the preamble was, but I do not think that the students in England recognise the extent to which the study of the Greek and Roman Orders is pursued in the Ecole des Beaux-Arts. It used to be the custom when I was studying in Paris in 1860, and it may still be continued, to give once a year what was called the "*Projet de l'Ordre*." This consisted of some subject for design, in which one or more of the classical Orders was to be applied. I say, or more, because I recollect that the first subject I had to take up was a design for two bays of the courtyard of some Government offices, in which the superposition of the Doric and Ionic Orders, with arcades between, were to be embodied. Two months were given to work out the design, and I remember that I made myself acquainted with every example known, from the Theatre of Marcellus and the Colosseum to the numerous courtyards in the Italian palaces. The second subject in the

Following year was for an Odeon or music hall, with a peristyle round the exterior and a portico on the front to be of the Greek Ionic Order. Here, again, I made a profound study of every Greek temple of which diagrams had been published, and as parts of the building rose above the peristyle and portico, these had to be designed in accordance with the style, which necessitated a rough research into the various accessory buildings of the sacred enclosure, in order to find "motifs" for my design. It was probably to this purpose of study that Monsieur Duc referred, and his view was that a student should make himself the master of the Orders instead of remaining their slave.

The other point in Mr. Jemmett's paper is the reference made to the use of the colossal Order rising through two or three floors: generally speaking, the problem is solved by stipulating the masonry of the ground storey, so that it makes a solid and suitable base to carry the large Order above; if, crowning this, there is either an attic storey, or, as in Somerset House, a lofty balustrade, the relative heights of these three sub-divisions give scale one to the other; one of the chief difficulties to be met with in this combination is the undue height of the entablature of the great Order, which would be a quarter of the height of the complete scheme—viz., including capital and base. This great height tends to interfere with the lintel of the second or upper floor window and the cill of the attic window, and there are some buildings in London in which the architect has cut through the architrave with a window, and utilised the frieze as the supporting member of the cornice. This is a mistake; the architrave is the correct supporting member, but the frieze is only a decorative feature which might be omitted.

There was no frieze in the Ionic temples of Ionia, but when the Attic Greeks introduced the Order into the Eretheion they omitted the Ionian dentil bed-mould, and in order to get sufficient height for the ceiling beams of the east and north porticoes were obliged to introduce a frieze, and this was necessarily carried round the whole temple; they omitted the frieze, however, in the entablature of the Caryatide portico. The omission of a frieze when a colossal Order is employed would lessen by about one-third the depth of the entablature.

There is still another treatment of the subject which was employed by Mr. R. Norman Shaw in the New Zealand Chambers in Leadenhall Street. Now, Mr. Norman Shaw is the grand master of fenestration, and when he was called on to design this building, he recognised at once that in this comparatively narrow street more light could be obtained up and down the street than from the side opposite. He therefore applied for permission to project some oriel bow windows. He was told, however, this was not possible, but if he liked to set back his front then he could project his bow windows. This his clients objected to, so he asked that proportion of the whole front would have to be in solid brickwork. I think he was told one-third. This he contrived in four great piers, and a part of the ground storey, and between these piers, and about 2 feet to 2 feet 6 inches back—viz., the required projection for his bow windows—he sketched in these features and took his design again to the Metropolitan Board of Works, and obtained permission, provided the woodwork of the windows was kept $4\frac{1}{2}$ inches behind the front of the piers. This regulation is now given up, but in 1873, when this building was erected, all window frames had to be set back $4\frac{1}{2}$ inches and in recessed jambs, because sometimes when in a Queen Anne building, where the frames were flush with the wall, if a fire took place they fell out and injured the firemen. These various inquiries led to the design of the New Zealand Chambers, which are not only the best lighted premises in the City, but the grandest and most impressive in design of any of Mr. Norman Shaw's works. These great piers rising from the ground to the main cornice have the same dignified aspect as that which is given by the employment of the colossal Order, but at all events in this case, Mr. Jemmett's statement that it results in a "pleasing but most misleading effect," certainly does not apply. I would suggest therefore that our students should make a point of going down to Leadenhall Street, now that I have told the story of the conception of these New Zealand Chambers, to see how certain regulations and requirements may sometimes result, in the hands of a master, in an original treatment of the whole subject. As a matter of fact, I believe the bow windows are not in wood, but in iron, so there is no fear of their falling on anybody's head.

Mr. ALAN SNOW, in proposing a vote of thanks, described Mr. Jemmett's paper as a particularly interesting one, inasmuch as it dealt with a question which required to be ventilated at the present day. In two Roman Orders the

arch should be included in the Order because the entablature was designed in conjunction with the arch. Mr. Jemmett rather seemed to think the application of the Orders as the only possible method of emphasising portions of a building. But not every one would agree with that view. In considering the subject it was extremely necessary to get fixed in one's mind what is an Order and what is the function of an Order. To his own mind an Order was not a structural feature at all, but rather the clothing of that structure, the expressing in a true and beautiful form of the function of a structure.

Mr. HERBERT A. HALL remarked that what was useful for them to discuss was the application of the Orders to modern buildings. Two interesting examples of their use in different ways by Mr. J. J. Burnet were in the British Museum additions and in the offices of the General Accident Fire and Life Assurance Company, Ltd., in Aldwych. But the application of the Orders got people who attempted it into all sorts of trouble. Unless one could use them in a rather noble way it seemed better to leave them out altogether, though there were obvious occasions for introducing them to advantage. For instance, where a lot of floors were one above the other the Order employed on the facade rested the eye, pulled the whole front together, and indicated that the top floor was as good nowadays as the bottom. In conclusion Mr. Hall spoke of the value of such a paper in affording those present an opportunity to air the troubles they came across every day in the offices and also to see if they were thinking about things on a little higher level than they were actually working on.

Mr. CURTIS GREEN referred to Mr. Spiers' saying that architects ought to be masters of the Orders and not their slaves. It seemed to him the dictum attributed to Monsieur Duc would read better as "There is no architect without the Orders." All the men doing good work to-day were undoubtedly masters of the Orders. He thought a great mistake would be made if they gave up drilling themselves in them at that time of their life when they ought to be drilling themselves in something. It might, however, be advantageous if there was a dictator in art who would lay down a rule that no three-quarter columns and no pilasters should be used for ten years.

Mr. A. G. R. MACKENZIE thought that if an architect could always remember that a piece of architecture was like a piece of poetry, and that the architect had the same license as the poet to emphasise those parts to which he wants attention drawn, then he would not go far wrong in their proper use. If, on the other hand, he employs an Order without thinking of the expression, then it is much easier to go wrong. There could be no doubt that nothing emphasised any part of a building so much as the introduction of columns.

Mr. R. JONES thought that the whole subject of town architecture resolved itself into a question of fenestration, for it was by the grouping of the windows that the character of the building is expressed. The Order, being a very rich and precious member, should not be used indiscriminately, but rather kept for some important post such as emphasising a doorway. Then there was a danger of, so to speak, repeating an Order "ad nauseam," for by duplicating it one loses its value. It was a pity that so many men nowadays are making use of the unsuitable colossal column for London street architecture. If greater attention were paid to the grouping of windows, especially where the materials are not very costly, there would be much finer results.

Messrs. V. R. TALVAKER, ALAN L. SNOW, and D. A. FORSTER also joined in the discussion.

Mr. ARTHUR KEEN, the president, in conclusion, said he wished to propose a joint vote of thanks to Mr. Jemmett and to Mr. Phene Spiers, the former for his paper and the latter for his notes and for the loan of the drawings hanging on the screen. He for his part had always wondered what the Greeks would think and say if they came back to earth and saw how their Orders were used. They would probably be entirely non-plussed. The Greek use of them seems the only way that is sound, though we have got accustomed to the modern way. It was difficult to see how it could be right to apply columns to a wall and make them part of it. Mr. Jemmett in his paper had treated the Orders as if it was a matter for æsthetic expression and not for construction at all; and that was the only way their use can be defended.

Mr. A. R. JEMMETT, in replying to some of the points raised, said that we have to have structural perfection for its own sake. It is something that a builder may do and is not architecture. The building begins to be architecture when it is so arranged as to express human emotion. A row

of columns is not architecture and means nothing. The mere arrangement on plan is the first method of expression. When that arrangement expresses the idea desired, then comes the decoration. If expression were not the one thing architects were after they would cease to exist as such, for they would all be engineers. There were undoubtedly many other ways of giving expression to a building besides the use of the Orders. The point was that if an architect uses them he ought to do so in a way that expresses something of the character of the building. If the Orders are put into a London shop front they give it too much importance, for they ought to be reserved for public buildings or special sites like the intersection of streets. Finally architects should remember that as impersonal artists it is their duty to express not their own character, but the character of the building.

The next meeting of the Association will be on March 20 (combined meeting with the Camera Sketch and Debate Club), when Mr. A. N. Price will read a paper entitled "The Legal Authority of the Architect as an Agent."

ROYAL ACADEMY LECTURES ON ARCHITECTURE.

THE third of the course of lectures at the Royal Academy by Professor Reginald Blomfield, A.R.A., was delivered on Monday, February 27, when he dealt with "Church Building in France in the sixteenth century, the end of Gothic Architecture."

Neo-Classic architecture in France established its predominance in civil and domestic architecture much quicker than in the churches. The attitude of church builders, said Mr. Blomfield, was one of strong and tenacious conservatism. Long after the details of Gothic had been abandoned the traditional plan and even construction was adhered to. That there was no real life in it is shown by the gross and irrational details into which it ultimately degenerated; but its survival was so general throughout France in the sixteenth century that no account of the architecture of that period would be complete without some reference to this last flicker of mediævalism.

New churches were comparatively rare. Just outside the south-eastern corner of France an entirely new church and monastery was built early in the sixteenth century, viz., the very remarkable church of Brou, near Bourg, in the south-eastern corner of Burgundy. In 1513 Margaret of Austria made an agreement with Louis van Boghem, of Malines, to design the masonry of a memorial church to her husband and to superintend its construction at a salary of 500 livres a year. The work was completed about 1530. Van Boghem put in a claim for 4,034 livres as arrears, but he only received 1,500 livres. He was evidently the designer as well as the builder. Both in general design and in details he adhered strictly to late Flemish Gothic of a rather peculiar kind, for the design is curiously unequal. The west facade is about as bad an example of Gothic as it is possible to find. The interior is well lit, quiet and dignified, and the choir is extraordinarily attractive in the spacious simplicity of the general treatment, acting as a foil to the exquisite delicacy of its detail. The important figure work in the three famous tombs was executed by a sculptor of Brussels who was partly but imperfectly Italianised.

The church at Brou was perhaps the last complete effort of pure Gothic in France and its borders; though a great number of additions were made to older buildings. Throughout this century there were two currents of thought, sometimes combining in imperfect fusion, more often directly antagonistic. The master builders were by no means disposed to abandon their familiar methods in favour of the new ideas introduced by the Italians and strenuously advocated by the new generation of architects. Where no architect such as De l'Orme was employed the tendency was always to slip back to the older manner. Political conditions were undoubtedly against the spread of the new manner in church building. The Huguenots were mainly iconoclastic, and the Catholics clung to the architecture that had for centuries given expression to their ideals. In fact, it was not till the return of the Jesuits in 1603 that an entirely fresh factor came into play.

The church-building of this sixteenth century falls into three main categories: (1) Churches, such as St. Gervais at Gisors, where designs for the facade on a comprehensive scale were attempted; (2) survivals such as Carnac, which curiously suggests the Laudian Gothic of certain Northamp-

tonshire churches; and (3) churches such as St. Eustache and St. Etienne du Mont at Paris, where, though all the detail is Renaissance of a sort, the informing spirit is still unmistakably Gothic. The cathedral or church of St. Gervais at Gisors is a most difficult problem. Not only is the work of the interior of different dates, but outside three separate and distinct attempts to remodel the whole west facade were made. The survivals of Gothic in France are even more curious than they are in England. The church of Carnac, for example, is an extraordinary mixture of styles, and is a typical instance of what was habitual in provinces remote from Paris. There are many others scattered about Brittany, which show the invincible tenacity with which the Bretons clung to the tradition of their forefathers and a curious barbaric instinct in design utterly alien to the temperament of the Frenchman of the northern centre.

There are churches of some historical though no great architectural importance, in which the old and the new meet with curious results. Renaissance detail of a sort is used throughout, and yet in the general treatment there is a throw-back to the motives of much earlier work. The new manner was used for details, but had in no sort of way penetrated into the heart of the design. In the church of St. Pierre at Auxerre there is not a single mediæval moulding, and yet the plan and organic idea of a church is so faithfully followed that the impression at first sight is that of a rather fine Romanesque church with later additions. When the elder Gabriel built the west front and the south transept to the Cathedral of Orleans, in 1706, he adhered to the main lines and general forms of Gothic, though totally ignorant of the mouldings, detail and whole spirit of Gothic architecture.

Of the churches where the detail is neo-Classic but the whole conception is Gothic, St. Eustache at Paris is the most famous example. It shares with Brou the distinction of being the only important church built "de novo" in the sixteenth century. Pierre Lemercier, who began it in 1552, evidently intended to show what could be done with a church in the new manner; but he never got within the fringe of the subject, and in fact produced an immense Gothic church in spite of the lavish details and ornament with which he covered his building. St. Eustache is impressive by its size, but it is an unsatisfactory building inside and out. Lemercier had little or no idea of organic design. St. Etienne du Mont at Paris has many of the defects of St. Eustache, but the interior is light and cheerful, and the church is generally more attractive, possibly because it was less ambitious. It is typical of what that composite person the mason-sculptor-architect could do at the end of the sixteenth century. All that is good in it belonged to the last of the mediæval tradition, the rest was mere groping after a new manner of thought and expression not really understood by the workman and still repugnant to his instincts. It is wrong to treat such men as Lemercier, the Le Breton or the Grappins of Gisors as architects at all. The results of their ignorant experiments were very much what a builder left to his own devices might produce at the present day. They trusted almost entirely to detail, but the detail was shot into their buildings without any consideration or even consciousness of its architectural value. In both cases tradition is as yet wanting and in both cases is the reason why architecture has gone so lamentably astray. Moreover architecture no longer expressed the ideals of the time. I failed, said Mr. Blomfield in conclusion, to provide the right background and environment for those complex conceptions of life and religion and that new point of view which carried a new manner with it in inevitable consequence.

MANCHESTER SOCIETY OF ARCHITECTS.

ON Wednesday, March 1, Mr. W. A. Forsyth, F.R.I.B.A., read a paper which was entitled "Notes on the Preservation of Ancient Buildings." The lecturer opened by remarking that the preservation and restoration of old buildings is an important subject for the attention of architects. When the opportunity occurs, architects must not always be ready or skilled in the treatment of the problem. Conservative methods are at all times necessary, imported material always unhappy, and native material invariably satisfying.

Mr. Forsyth then proceeded to speak of the principle that should be observed in the renovation of an average village church or manor house. First, as to what should be preserved. All that is fit and sound, apart from con-

derations of taste and fashion and often of convenience could be retained. It is always possible to make full use of a mediæval church for purposes of worship, and it is no hardship to adapt one's mode of living to an old house. The Town Planning Act respects ancient monuments, even if a good scheme is interfered with by the position of an historic building.

Second, as to the means of carrying out the actual works, restoration should have enduring qualities. It is pathetic to see the Victorian restoration of an historic London church renewed at this early date. All works should be given ample time in execution. Accurate drawings of the building should be made, showing all the irregularities. And he advocated the use of freehand drawings. A ruled plan cannot be accurate. The specification should be complete in every detail, and photographic records are valuable. Orders should be avoided. He knew of no more satisfactory method than a 10 per cent. profit arrangement.

Coming to the actual operations, Mr. Forsyth dealt in turn with each part of the work. Rubble walls, he said, are largely misunderstood to-day. It is usual to point them, but as a rule no pointing is required, except in the dire extremity of the solid materials having become loose. The difficulty of making either plastering or pointing adhere to rubble is not realised. There are three distinct schools in the preservation of stonework to-day. The first might be called the "lime-washers." There is strong sentiment amongst them against attempting to repair in the actual form and material of the original; if a stone mullion is crumbling, it is repaired with brick or tiles, and the place smeared over with mortar. They are anxious that their patching should reveal itself for all time. To a certain extent this school is justified by the glaring results of the second, the "replacers," whose entire creed is to "cut out and replace with new to match." The third school is that of the "fakers," whose delight is to deceive, and to remove all evidence of renovation. It is difficult to say which process is the most desirable. Mr. Forsyth proceeded to give instances of each method. At Westminster, a great work of "lime-washing" is being carried out by Professor Bethaby, the decay of the stone being arrested by the application of limewash; some colouring is utilised to assimilate the applied material to its environment.

The use of the same methods of construction as obtained in the original building was advocated, such as the cutting of the mouldings on groin ribs in situ. After dealing exhaustively with the use of wrought iron tie rods, and warning architects against the use of metal in association with stone, concrete, or brickwork, Mr. Forsyth spoke of the treatment of roofs. Machine made tiles should be entirely excluded. English oak, he said, is the only timber. In repairing old roofs, all work should be done in position to avoid the taking down of old rafters, tie-beams, and girders. Old seasoned material should always be employed. In plastering, slow setting limes should be used.

UNIVERSITY OF LONDON LECTURES ON ARCHITECTURE.

The subjects of Mr. Banister Fletcher's lecture at the British Museum on Tuesday, February 21, were the palaces of the Roman Emperors, the houses of the Romans and Pompeian Art.

Augustus built his palace, with the Greek and Latin libraries to the south of the Palatine Hill, the former site of the ancient Royal palace. After the time of Theodoric the Goth, the "House of Augustus" fell into ruins and became the property of the Church. The first excavations on the Palatine Hill were made during the laying out of the Farnese Gardens by Pope Paul III. in 1534-1550.

In 1721 to 1730 further excavations brought to light many works of art which were removed to Naples and Parma. In 1861, under Napoleon III., who bought the Farnese Gardens, the work was undertaken systematically by the architect Pietro Rosa, and continued later by the Italian Government when they acquired the Gardens in 1870. The digging revealed a group of magnificent palaces which had been planned on axial lines producing beautiful vistas; hemicycles and columns cleverly disguised any irregularities caused by additions made at various times, bringing the whole into symmetry and harmony, a system which is frequently adopted in modern architecture.

In the year A.D. 14 Titus had built another palace north-west of the Palace of Augustus. Caligula enlarged this building considerably and Titus and Domitian re-erected

State apartments to the south-east. Septimius Severus added the portion south-east of the Stadium of Domitian, of which remains exist.

The Golden House of Nero was not built on the Palatine, but on that portion of the Esquiline Hill where the Colosseum and the Baths of Titus were erected by the Flavian Emperors as an offering to the people to atone for the theft of land made by Nero in order to build his palace, which was a mile in length and one of the most gorgeous buildings ever known. It contained works of art from Greece, Asia Minor and Egypt. It was built after the Great Fire of Rome in 65 A.D., which lasted for nine days.

The interior was decorated in the most lavish way with gold, precious stones and ivory, and the banqueting-room, which was circular, had walls made to revolve by machinery in imitation of the heavens. The palace was destroyed by Vespasian and Titus as a matter of policy, and the buildings mentioned above erected on its site.

But with the destruction of Nero's Golden House, the want no doubt was felt for State apartments which the Palace of Domitian supplied. This palace was on the Palatine Hill, reached by the roadway from the Arch of Titus. A flight of steps led to a portico of Cipolino columns.

The throne room or tablinum is to the north of the central peristyle; it was 150 feet long by 120 wide (40 feet wider than the nave of St. Peter's), and covered with an intersecting vault. An apse for the Emperor's throne faced the entrance and two other openings from the peristyle flanked it on either side.

The lalarium, which contained the altar and statues of the household gods was east of the tablinum, to the west was the basilica, with aisles in two storeys, and a semi-circular apse having marble seats and crowned with a coffered semi-dome. The church of St. Agnese Fuori le Mura is very similar to this basilica. The peristyle is 175 feet square, surrounded with marble columns.

The triclinium or dining-room is to the south, with a nymphaeum adjoining, the walls of which are lined with marble and the central oval fountain still in situ. It probably had a central opening for light and contained flowers, fountains and running water, forming a delightful arrangement for a State banqueting-room.

The Palace of Diocletian at Spalato was next described by the lecturer. The Emperor Diocletian was born at Salona, four miles from Spalato. He was made Emperor A.D. 284, and in the following year he began to build the Palatium, from which Spalato takes its name. In 305 A.D. Diocletian abdicated and resided at Spalato until his death in 313 A.D. From 313 to 639 the place remained unoccupied save by refugees from Salona who had been driven out by the Goths and Croats.

In 649 Pope Martin appointed Giovanni di Ravenna as first Bishop of Spalato, and the Temple of Jupiter (or Mausoleum) was converted into a cathedral. From 806 to 1812, when finally the town became Austrian property, it was occupied successively by the Franks, Venetians, Hungarians, Neapolitans, Croats and Turks.

A great portico or gallery, 524 feet long and 24 feet wide, extends the whole length of the south front of the palace, which faces the Adriatic Sea. The whole covers an area of 9½ acres, measuring 592 feet to the south, 570 to the north, and 698 east and west. There are three entrances guarded by octagonal towers and leading to two colonnaded streets which divide the whole area into four parts as a Roman camp; the two northern parts were devoted to the courtiers and women's quarters, and the southern part formed the Imperial residence.

The principal entrance is by the north or Porta Aurea (the Golden Gateway), the eastern entrance is by the Porta Ænea or Brazen Gateway, and the western entrance by the Porta Ferrea or Iron Gateway.

The palace consisted of the Imperial residence, the vestibule, atrium, basilica, baths, private apartments, Temple of Æsculapius, and Temple of Jupiter, thought to have been the Mausoleum of Diocletian.

This building is one of the first examples of the decay of Roman art, as a square-headed flat arch covers the opening of the Porta Aurea, over which the entablature is bent round in the form of an arch, thus losing its structural significance. The wall surface externally is arcaded with semi-circular arches supported by small granite columns having Corinthian capitals. The columns are supported on corbels and the arches spring direct from the columns, suggestive of the Gothic principle of later years.

Hadrian's palace, near Tivoli, the House of the Vestals, and examples at Pompeii were also discussed.

ARCHITECTURAL CRAFTSMEN'S SOCIETY, GLASGOW TECHNICAL COLLEGE.

At a meeting of the Glasgow Technical College Architectural Craftsmen's Society, held in the College on March 3, Mr. James S. Boyd, Licentiate R.I.B.A., read a paper entitled "A Study of French Architectural Masonry." The organisation of the workmen in and the management of a first-class masons' yard in Paris was described and compared with similar yards in this country. Over one hundred photographic slides, showing the construction of domes, vaults, skew-bridges, &c., in Paris, Versailles and Rouen, were exhibited. The speaker stated that the boldness in French masonry construction was traditional, just as caution or lack of boldness was traditional in British work. In concluding, the opinion was expressed that architects in Britain should be trained to thoroughly master the practical application of geometry to building work, so that they (as master-craftsmen) may assist the actual workman in solving any intricate constructive problem that may arise in the carrying out of the design of the master-mind.

GLOUCESTERSHIRE ARCHITECTURAL ASSOCIATION.

The President (Mr. Walter B. Wood) occupied the chair at a meeting of the Gloucestershire Architectural Association held at the Northgate Mansions on Thursday, February 23, when Mr. L. Richardson (Hon. Fellow) gave an instructive lecture on "Brick Earths and Brick-making in Gloucestershire."

Mr. Richardson, in the course of his lecture, described the various ways in which bricks might be made, either by the slop process, semi-plastic or plastic processes. The slop process was that which was adopted in the Severn-side brick-yards; the semi-plastic at Robinswood Hill; while the plastic was that most generally used in Gloucestershire. He next described the various brick earths available in the county, and said that a loam was the best natural earth. It, of course, was composed of sand and clay, but very excellent bricks could be made by mixing and grinding together sand and "strong" clay. This was done at the Battledown Works. The sandy beds that crop out in the lower portion of the slopes of the Cotswolds afford the best natural brick earth in East Gloucestershire, and the beds could always be detected by their attendant growth of gorse bushes. The Stonehouse, Robinswood Hill, Pifford, and Aston Magna pits were all in this deposit. The Greet Potteries obtained their raw material from the same beds. Views of the extensive Cattybrook Works were shown on the screen. Here bricks are made of coal-measure shales, as is also the case at Shortwood, near Mangotsfield. At Stoke Gifford the red (Keuper) marls are ground up for brick-making purposes, and it was pointed out that this rock was largely used in the Midlands for this purpose. The lecturer emphasised the necessity of exercising great care in opening a brickyard. Suitable "earth," a site near a railway or proximity to a likely market were essential desiderata. Brick-making seemed quiet in some parts of the county. The brick earth was there, but the want of a reliable market was the defect.

A discussion followed, in which a number of members and visitors took part, and the meeting closed with a hearty vote of thanks to the lecturer.

ENGINEERING PLANT IN INSTITUTIONS.

(Concluded from page 132.)

The Laundry.

The essential equipment of an institution power laundry consists of washing machines for washing, boiling and rinsing clothes, hydro-extractors for wringing or, more properly speaking, extracting the water; drying horses, or closets for drying the clothes; mangling machines, or ironing machines for pressing. Added to these are auxiliary apparatus, either for increasing the capacity of the plant, or for adapting it to the needs of any particular institution.

Tanks are also fixed in the laundry, variously for the purpose of soaking or rinsing. Boiling tanks are also occasionally added, but more frequently boiling is now carried out in the washing machines. Insane asylums have additional washing machines for fouled linen, which is cleansed, washed and dealt with without requiring to be touched by hand.

In workhouses and infirmaries, and infectious hospitals, disinfecting machines are added, and in the first-mentioned institutions a hand-power plant is sometimes installed as a source of employment for the inmates.

Hospital and school laundries are also further equipped with certain refinements in the way of special apparatus for dealing with body linen and starched apparel.

Washing machines may be described, briefly, as a stouter case provided with a brass inner cage, which turns on a shaft. This inner cage is provided with perforations to allow the water which is turned into the outer cage to enter upon the linen. Various makers have specialities in the design of these cases, all with the intention of introducing the water into the cage with greater force, since the washing depends upon what may be described as a thorough splashing of the linen into the water. Washing machines are provided with an automatic reversing gear, by which the machines are made to run a certain number of revolutions, alternately, in either direction to avoid "roping" the clothes. The outer case of the machine is fitted with a cold-water and a hot-water inlet valve, and a perforated steam-spray pipe, which is fixed along the bottom. Many machines are (and should be) fitted with an appliance making it impossible to start the machine while the outer case is open. Many of the fingers and hands which have been sacrificed on account of the absence of this arrangement.

When washing of the clothes is complete they are transferred to the hydro-extractor. This machine had its genesis in the sugar refinery, and was first—and still is—used for extracting the syrup from the sugar. It consists of an outer cage of cast iron or steel, and an inner basket which revolves on a central spindle at a speed of about 1,500 revolutions per minute, and the water is forced out of the clothes through the perforations of the cage by centrifugal force into the outer case, and from thence to a drain. This is, beyond question, the most thorough method of extracting the water, and in many cases it is only necessary to pass the clothes through the ironing machine to finally dry and finish them. It is said that the hydro-extractor will extract 85 per cent. of the moisture from linen, against 30 per cent. with the best wringing machine.

If the clothes are not to be ironed they are taken from the hydro-extractor to the drying chamber. This chamber is sometimes fitted with a series of "horses," or rails, upon which the clothes are hung, the continuous line of the frames of the horses forming one side of the chamber, or, as is now more general, the closet is entered by a door and hung with lines of galvanised steel wire. It was formerly the practice to construct a furnace under the floor of the chamber, or to fix in the same position a quantity of steam-heated pipes, to dry the clothes suspended in the chamber, but it is now becoming more generally recognised that heat is of little use without air, and that a large quantity of air at a comparatively low temperature is of far more service in drying than a scorching heat with little air.

Very few drying plants are now installed without a fan for forcing in fresh air over heated surfaces, and it has also become more generally recognised that the heating surface is necessary for heating the air, when a fan is employed, is much less than under the old system of letting the air supply take care of itself. Although the temperatures of these chambers frequently do not exceed 140° to 150° with a plentiful air supply, they are far more efficient than the old chambers were at 180° with a restricted air supply. While it is quite true that the capacity of the air for taking up moisture increases with its temperature there is a point reached at all temperatures, known as the "dew point," at which air can take up no more moisture, and before this point is reached in a drying-room the air should be cleared out of the room.

It has often been debated whether it is best for the air to enter at the upper or lower part of the drying chamber, and both positions have their adherents.

On the one hand it is said that the natural tendency of heated air is to rise, and should, therefore, be extracted from the top of the chamber, and on the other hand it is asserted that if the air is driven upward, as it picks up moisture on its way the moisture may condense on the roof of the chamber and fall back on the clothes. The writer personally has an open mind on the subject.

It was mentioned a little way back that where the clothes were finished in an ironing machine the drying closet was often unnecessary. Time does not permit us to discuss the matter in detail, but mention may be made of the best known machine, viz., the Decoudun. This machine is of French origin, and is also sometimes known as a calender. It consists of a fixed hollow concave polished cast-iron bed, in which steam is admitted at a pressure of 40 lbs. per square

MODERN EUROPEAN ARCHITECTURE.
FRANCE.

PREMIATED FACADE, PARIS, 1909.—No. 42 COURS-LA-REINE AND PLACE DE L'ALMA.—MM. NAVILLE & CHANQUET, Architects.

ch, and a temperature of about 235° . In the hollow of is bed revolves a cast-iron cylinder of large diameter, which also heated with steam at a lower pressure. This latter is encased in felt, and its function is to engage the article to be ironed, and pass it, with a slow rubbing motion, over the concave heated bed, which not only imparts a finish to the article, but also dries it. These machines are also fitted with levers for raising the rollers off the bed, and they should also always be fitted with finger guards, as accidents are, unfortunately, not at all uncommon with these machines.

Having described some of the principal machines to be found in the institution laundry, we can only regret that

time does not permit of the description of others, as we must pass on to the method of driving.

The machines are, of course, driven from a line of shafting, which is driven by either an electric motor or a steam engine. The latter is, of course, the more economical arrangement, as it will usually be found that the heat contained in the exhaust steam from the engine will generate all the hot water required for the laundry purposes, and also heat the air-heating coils for the drying-room.

The writer's invariable speed for the shafting of a laundry is 200 revolutions per minute, which makes not too small a pulley for a washing machine, and not too large an one for the hydro-extractor. A slower speed is usually

adopted for the ironing-room, however, as almost all mangling and ironing machinery is of a slow-running nature.

Before turning the exhaust steam from the laundry engine into the hot-water heater and the air-heating coils, it is necessary to free the exhaust steam from its suspended grease particles as much as possible. In a previous passage it has been pointed out that grease is a very poor heat conductor, and it is fatal to heat efficiency to permit the inner surfaces of such heaters to become coated with it. Before using the steam it should be passed through a good type of grease separator, which is in construction very similar to the steam dryer, which has been already described.

The greasy deposit should be removed as soon as deposited in the separator, and discharged to the drain, together with the condense water from the heater and air-heating coils, and the interior frequently cleansed.

The separator should be fixed on a by-pass connection from the exhaust pipe of the engine, and the exhaust pipe continued to atmosphere as usual. In order, however, to induce the steam to pass to the heaters the exhaust pipe should be fitted with a weighted valve loaded to not more than 8 ozs. per square inch. It is not a good practice to increase this back pressure, since it should be remembered that such back pressure is not a reduction of the initial pressure but of the mean effective pressure, and the power of the engine suffers, as a glance at any indicator diagram will show.

The last appliance which shall be mentioned in this review of the engineering appliances is the disinfecter, and its principle is as interesting as most of them. This machine is usually built into the partition wall, dividing the disinfecting building into two divisions. The disinfecting machine has an oval section about 7 or 8 feet long and about 4 feet high, fitted with an outer steam jacket and a door at each end of the machine, one door being on the "infected" side of the partition referred to, and the other door being situated in the "disinfected" chamber. A travelling cradle is made to run in and out of the machine, and is sufficiently large to contain a bed. A vacuum apparatus, consisting of a steam air ejector, completes the equipment of the disinfecter. It has been found by experiment that nothing but a moist temperature, exceeding boiling point, is successful in destroying germ life and the eggs of vermin, and that a dry temperature, high even to the point of damage to the articles under treatment, is practically useless for the purpose. The operation of the disinfecting machine is, therefore, as follows:—

After the articles are placed in the machine, and the covers made perfectly air-tight, steam is turned on to the air ejector and all the air is removed from the inner chamber, and from all the minute air-containing cells of the articles under treatment. Steam is then admitted to the outer jacket, and secondly to the inner chamber, the steam in the outer jacket, being at the same temperature, preventing condensation of the inner steam. The steam in the inner chamber condenses on the colder clothing, and wets it through with the hot water and destroys all life. When the operation is complete the inner steam is shut off, and the resulting vacuum vaporises the remaining moisture out of the clothes; warmed air is then admitted to complete the drying process.

Since it is far easier to exhaust our time than the material at our disposal, we must take leave of a very interesting subject, and the writer's regret is that it has been impossible to give it more than general treatment, and in consequence feels that the whole paper is very cursory; but although you, perhaps, have heard nothing which you do not already know, it may make material for profitable debate.

OUR CONTEMPORARIES FROM OVERSEAS.

THE *American Architect* (New York) has gathered a series of illustrations from the twenty-sixth Annual Exhibition of the Architectural League of New York, which includes examples not only of the latest buildings designed by American architects, but also of garden architecture and of painting and sculpture in connection with architecture.

Der Architekt (Vienna) gives several illustrations of the work of Professor Josef Hoffmann in modern domestic architecture, a toy shop at Buda-Pest by Laszlo and Josef Vago and a design for a bathing establishment by Rudolf Perco, a student of the Wagner School.

Arkitektur og Dekorativ Kunst (Christiania) illustrates some of the plans, including those premiated in the competition for the revision and addition of the town plan of Trondhjem. The first premiated design is by Albert Lillienberg and Sigfrid Ericsson, of Göteborg.

La Construction Moderne (Paris) illustrates the Oceanographic Institute recently erected in the Rue Saint Jacques at Paris, at the expense of Prince Albert of Monaco, from the designs of Mons. Nénot.

Stone (New York) has an interesting account of a new departure in the use of slate for roofing on flat surface which is worthy of attention, though no comparison is made of the cost of the new method with older ones.

Construction (Toronto) devotes the greater part of its space to the description and illustration of competitive designs for the proposed new Knox College, Toronto, for which Messrs. Chapman and McGiffin have obtained the first place. The designs are in various phases of Gothic, mostly Norman, though the winning design is based more or less on Tudor work.

Engineering Record (New York) contains an account of the testing of the foundations of the new 40-storey municipal building at New York.

COMPETITION NEWS.

HENLEY.—About fifteen architects have signified their intention of submitting plans for the proposed Grammar school at Henley.

PENRITH.—The Governors of Queen Elizabeth's Grammar School, Penrith, recently invited competitive designs for the erection of a secondary school, accommodating 200 students with provision for the conduct of technical and evening classes. The premiums offered to competing architects were first 50*l.*; second, 25*l.*; third, 10*l.*, and have been awarded as follows: 1, Messrs. Harrison & Ash, Pilgrim Street, Newcastle-on-Tyne; 2, Mr. W. P. Schofield, Leeds; 3, Mr. Theodore Halliday, Manchester. About 200 architects applied for particulars. The school will cost probably from 10,000*l.* to 12,000*l.*

WALLSEND.—The conditions of the competition for the proposed new school buildings, Wallsend, have been considered by the Council of the Northern Architectural Association, and they point out that the promoters do not state that an architectural assessor will be appointed to make the award, nor is any pledge given that the author of the design placed first will be employed to carry out the work (unless there is some valid objection to his employment). In these respects the conditions are a distinct violation of the regulations issued by the R.I.B.A., and members of the Association have been asked not to compete unless the conditions are modified.



[The Editor will not be responsible for the opinions expressed by Correspondents.]

Statues and Sanitary Conveniences.

SIR,—To what are we drifting, we English nation of shopkeepers? Our notions of fitness are so pitifully severed from an intellectual appreciation of art.

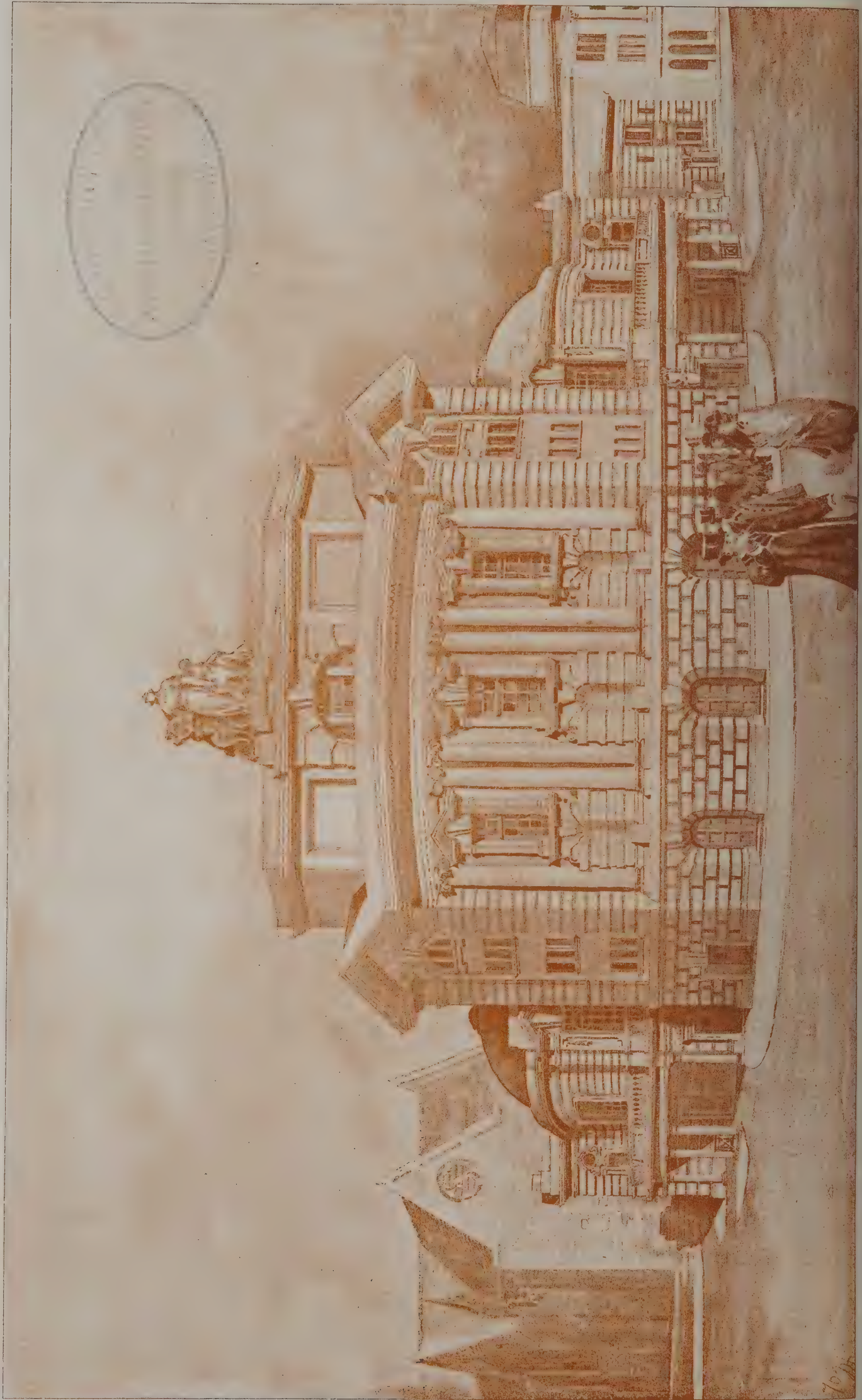
It is now some years since my attention was first attracted to a statue of George III. set up in the quadrangle of Somerset House. I will say nothing as to the merits of the group, my sole desire here being to deprecate the conjunction of statuary and a sanitary convenience.

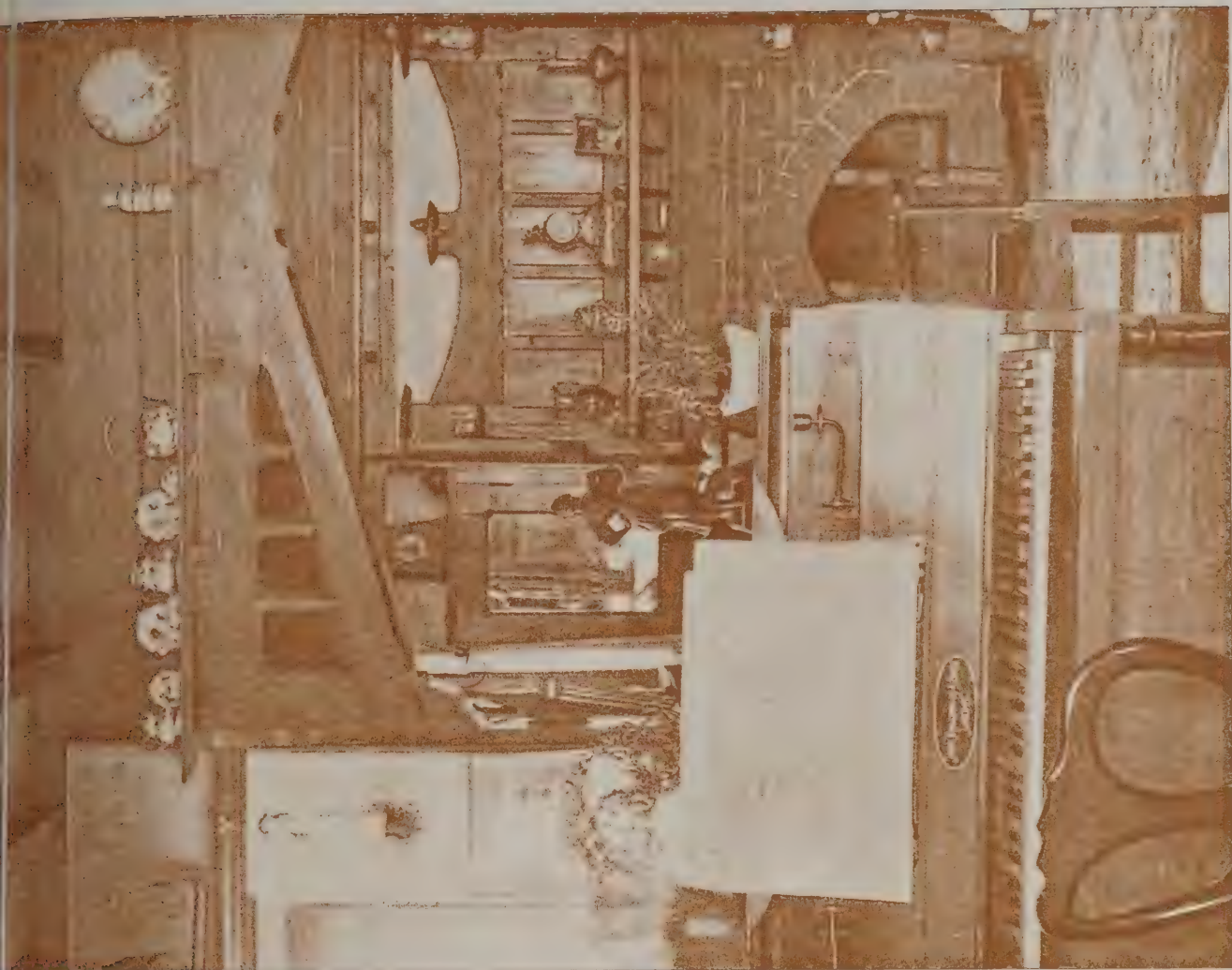
But now—now, Sir, this degrading treatment of art has been repeated, and with exaggerated emphasis, at the Royal Exchange. The pleasing equestrian Wellington group, which has hitherto stood solidly on the footway, entirely dissociated from any practical or social convenience, now rises to all appearance from an unsubstantial glazed ventilator—and, ye gods! a ventilator to a sanitary convenience.

Cannot the City Fathers make further use of the Iron Duke by rigging up a weather-vane at the summit of the group? The inappropriateness as a simile need not prove deterrent, when the desire for knowing which way the wind stirs our pulses,—Faithfully yours,

PERCY L. MARKS.

49 Queen Victoria Street, E.C.: March 3.





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"MOOR COT." BEN RHYDDING.

MR. W. H. H. MARTEN, ARCHITECT.



The Architect, Mar. 10th 1911.



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Mr. A. N. PRENTICE, F.R.I.B.A., Architect.

The Architect, Mar. 10th 1911.



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prove exceedingly useful to other authorities. Ruislip-Northwood may, indeed, be taken for the present as the leading case on town planning in practice.

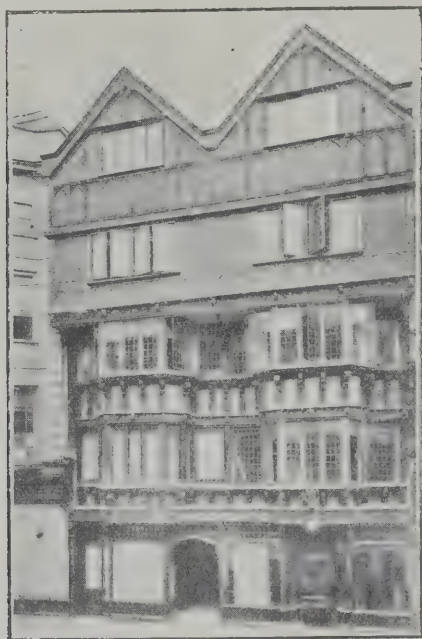
THE USE OF GLASS IN BUILDING.*

By MR. NOEL HEATON, B.Sc., F.C.S.

(Official Report.)

AT Carpenters' Hall, on Wednesday, March 9, Mr. N. Heaton gave a lecture on "The Use of Glass in Building," illustrating his remarks with a series of lantern slides.

Mr. Heaton said he understood the object of the series of technical lectures which were being given at Carpenters' Hall was to emphasise the treatment of design rather than to discuss actual building materials as such. The trouble with



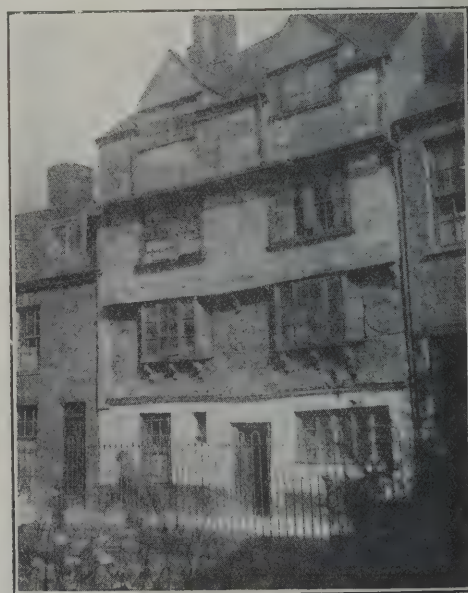
this for him was that he was quite incompetent to speak on any question of design. In fact, he was a hopeless materialist, and his study was the technology of materials, and all he could do that night therefore was to discuss with them the subject of the use of glass in building as a material. When they came to think of it, the use of glass in building was primarily determined by practical rather than æsthetic considerations, and with it perhaps more than with any other material design was dominated by the limitations of glass as a material. They would probably all agree that the design of the windows of a house was a most important feature of its architecture, for in this country at any rate glass windows were as necessary to the house as was the roof. The success of the house from the point of view of the dweller in it depended on their planning, as did to a large extent also the beauty of the elevation, and consequently its success from the point of view of the man in the street. He proposed that night, therefore, to try and point out the possibilities and limitations of glass as a material for building and to indicate a few of the troubles as regarded its use.

The most interesting way in which he could bring the matter before them was to review the history of the use of this material as applied to houses. Of course they all knew that glass as a material dated back for many centuries. At least they knew all about how it was used as far back as 1600 B.C., but at that time its use was confined to the manufacture of vases and objects of art and so forth, and it was not till considerably later, almost at the dawn of the Christian era, that they found it applied in any shape or form to buildings. When the Roman Empire developed northwards, and particularly when it extended to such countries as Britain, the Romans were forcibly reminded of the fact that it was necessary to find some material to put into their windows, which would admit light, but exclude air and cold. So long as civilisation was confined

to such places as Egypt and the neighbourhood of the Mediterranean, there was no crying necessity for such a thing, but when the Romans came to this country it became a very serious problem. The Romans were skilled glass-makers, and they were not long in realising that glass was a material eminently adapted for this purpose, and so we find that glass was first used for windows by the Romans.

He would put on the screen illustrations of three fragments of typical window glass used by the Romans. The first piece came from Switzerland, the second was a piece he picked up himself at Pompeii last summer, and the third was a piece found at Silchester. It was made by just pouring the molten glass on to a slab of stone. They could tell this by the nature of the surface. The Romans made it in sheets about 12 inches by 18. It did not answer to their ideas of window glass, for it was not perfectly transparent; it was merely intended to exclude air and admit light, and they did not hope to see through it. As regarded the material, however, it was very good indeed, and was very durable. Essentially glass consisted of sand, which was fused with soda or potash and also some such material as lime or magnesia. Roman glass would contain about 70 per cent. of silica or sand, 15 per cent. of soda, and 15 per cent. of lime. These materials were fused together in a furnace, and the resultant glass was poured out on to a slab as he had described. Until recently it was supposed that this was the highest height reached by the Romans in making glass for the purpose of windows, but now they had discovered the Romans knew all about the use of the blow-pipe, and by means of the blow-pipe they could make glass of much superior character to that just described. As a matter of fact it was only within the last few years that it had been shown that the Romans were the first discoverers of the several processes of making window-glass by the aid of the blow-pipe which were in use at the present day.

He would try and describe briefly the various processes in vogue of making glass by the aid of the blow-pipe. In the first illustration they saw a man taking the glass from the crucible of molten glass. He took a mass of viscid glass on the end of his blow-pipe and rolled it on the surface of a slab, the object being to round the glass so that he could blow it in an even and regular manner. He then took the lump of glass which he had rolled out on the marver and blew air into the centre and then by successive stages he blew the glass out until it took the shape of a long cylindrical flask. By further manipulation the ends of this flask were opened out, resulting in the production of an open cylinder—similar to a lady's muff, hence the name "muff glass" commonly applied to this process.



The cylinders thus formed were converted into flat sheets by slitting them along their length with a diamond and then unrolling them, so to speak, this operation being conducted in a special furnace.

There was another process of getting glass into sheets, and that was by means of spinning. The started in exactly the same way by blowing a small flask but subsequently the glass was rapidly revolved in front of the opening to the furnace, when by the influence of centrifugal force it opened out until finally they got a flat disc

* An illustrated lecture delivered at Carpenters' Hall on March 8. Seventh of the Series on "The Arts Connected with Building."

with a lump in the centre. The Romans knew all about how to make glass in this way, and were by no means confined to the crude method of rolling it on a slab. He would show a photograph of a specimen of glass found at Silchester, and which was now in the Reading Museum. It must have been made towards the end of the Roman occupation, for similar glass had been found nowhere else except in England. It was a much more perfect glass than the earlier specimens he had shown of cast glass, and much more transparent.

Window glass was fairly well developed by the Romans, but with the fall of that Empire it suffered a period of decline. Window glass was quite common in Roman times, but after that it became almost extinct until getting on towards the eleventh century, when it was revived again in connection with the art of stained glass. At this time they found both the methods which he had described of making glass by means of a blow-pipe in use—e., the muff glass and the spun glass, although the muff

a great display of stained glass, and all throughout the mediæval period the use of glass as a building material was practically confined to this craft.

Much as there was to say on this important branch of the subject, he would leave it with this cursory reference, because his purpose that night was to deal with the more prosaic use of glass as a building material, and they did not find it used to any very great extent in that connection until getting on towards the end of the sixteenth century. They got a connecting link between stained glass used in church building and its more common use as a building material in the fine domestic stained glass, as it was called, which was particularly characteristic of Swiss work. They put little panels of painted glass in their doors, which was very fine work of its kind. It was not exactly stained glass, but they must give it a tribute of admiration. Mr. Heaton exhibited a photograph of the building which is now the Training College on the west side of the Cathedral Close at Salisbury, and pointed out how, owing to the fact that glass could only be obtained in small pieces at the time the house was built, the windows were divided up by stone mullions. The lecturer proceeded to show other views, including one of a window in the Jerusalem Chamber of Westminster Abbey, to illustrate the use of glass at the period. A very interesting example was the window recently discovered at the Guildhall, a photograph of which he was able to exhibit by the courtesy of the City Surveyor. The Guildhall was built in 1411, but they knew that in 1643 the stained glass was turned out as being idolatrous.

There was a considerable suppression of stained glass at the time of the Reformation, and where discovered it was turned out; and they knew that in 1643 the window at the Guildhall was reglazed with plain glass. At some time or other that window was filled in with lath and plaster, and there it remained hidden away until last year, when Mr. Perks discovered it and revealed it, and it was quite certain that a great deal of the existing glass was that which was originally put in in 1643. They knew that the window could not have been wholly blocked up at the beginning of last century, because there were one or two panes of glass of a type not introduced until then, but all the rest was what was known as broad glass made by the muff process and characteristic of the seventeenth century. Mr. Heaton next showed two windows of a charming old house at Ipswich, the glass of which was of about the same period as that in the Guildhall window. He was at Ipswich last week, and observed that the majority of the glass in the house was put in during the reign of James I. or Charles I. The window was surmounted with the arms of Charles II., but that he thought was added



ROMAN GLASS.

glass was then called broad glass. The old cast glass of the Romans had entirely disappeared, and they did not see anything of it again till quite modern times. The mediæval window glass was not what the builder of the present day would call good glass; it was very imperfect from the practical point of view, but very beautiful to look at. Owing to the very crude method in which it was made, it had a lot of peculiar markings, due particularly to the process of flattening and the rubbing of the hot iron along the surface. It would certainly not have done for making lantern slides, but it gave a beautiful effect to anything seen through it. It was this peculiar quality which gave the beauty to the mediæval stained glass so much used in the Gothic period. Spun glass was also used at that time, and this they could tell by the "reaminess" of the glass and the circular line formed during the process of spinning. Glass in those days could only be made in very small pieces, and as a consequence they got the idea introduced of joining the pieces of glass by means of strips of lead, so characteristic of stained glass. It was only by means of this lead-work that they could fill the large spaces of church windows.

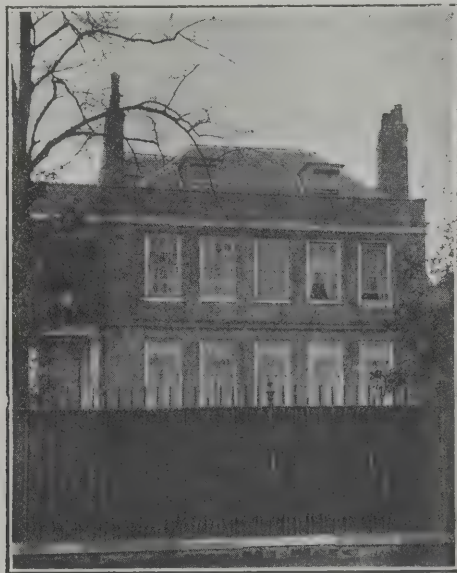
He had told them that the Roman window glass was very perfect in composition, but as they went on through the mediæval period it steadily deteriorated. They could dig up Roman glass 1500 years old practically untouched, when mediæval glass under the same conditions would be destroyed. Up to a certain point that was an advantage, because the decomposition of the surface of the glass added very considerably to its beauty; but that of course was only within limits, and when they got to the point that the glass almost disappeared it was going too far. As time went on they got worse and worse in this respect. At this period window glass was not used very much for domestic purposes, but was almost entirely confined to use in connection with the art of stained glass for church windows. Stained glass was of course an extremely important feature of mediæval work, and had a great influence on the development of Gothic architecture. He showed an autochrome slide representing the celebrated "Five Sisters" window at York Minster. York, amongst other churches, was distinctly built in order to gain



later. All the windows he had shown were simple diamond panes, but sometimes more elaborate windows were employed, and as early as 1615 a man wrote a book giving various designs for the use of glaziers. Besides broad glass, sometimes spun glass was used for domestic windows, and this style of glazing was often known as German round glass. The effect was very delightful altogether.

Mr. Heaton exhibited a view of the Stonegate in York to give an idea of the way the windows fitted in with the

general architecture of the period; and also a view of what used to be Nols Coffeehouse in the Cathedral Yard of Exeter with seventeenth century windows. He thought they would all agree that the charm these quarry windows had was the way they broke up the surfaces. But, as he had pointed out, this method of glazing came about by the limitations of the material, and they could not give the builders the credit of having done it for effect. If they could have got large sheets, no doubt they would have used them; but that was difficult, and so they got the delightful method of glazing they had seen. But as civilisation, so to speak, progressed, there arose a great demand for larger sheets of glass. They were not satisfied with these quarries, and wanted larger sheets with less colour and "imperfections." People set to work, and towards the end of the seventeenth century chemistry and science began to be organised, and especially they got to discover how to make soda direct from salt, which gave an immense impetus to the manufacture of



glass. They also began to get organised effort in the development of mechanical skill, and, putting everything together, they gradually got away from those limitations of the material which resulted in the invariable use of small quarries in glazing.

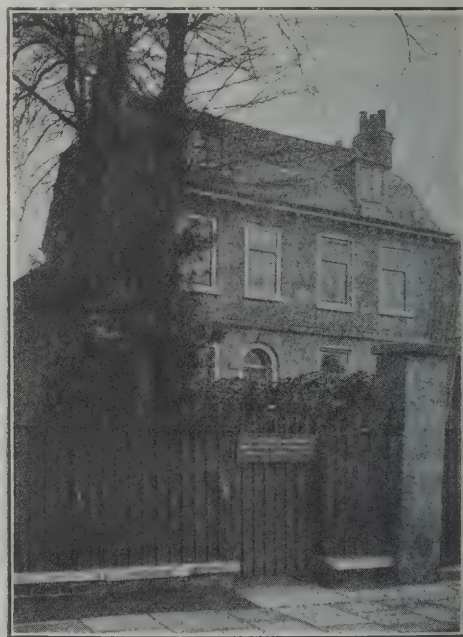
About the end of the seventeenth century a new method of making spun glass was introduced on the Continent and brought over here, the first factory being set up at Newcastle, which turned out what was known as Crown glass. They were able to get larger panes by this process and make them more cheaply, and in consequence broad glass was very soon entirely superseded by Crown. Many of the old houses turned out their diamond panes and put in sashes filled with Crown glass. They went on developing and constantly increasing the size of the discs or "tables" until they got to the limit of practicability by the process. The largest Crown table he had ever seen was 52 inches in diameter. Theoretically the largest sheet they could get from that was 31 inches by 18 inches, but in practice they did not get anything like it, and the largest square of Crown glass he had ever seen measured 19½ inches by 17. Although the Crown glass was far superior to broad glass, yet it was still expensive, because there was so much waste. They had to cut away the centre unless they were content to have the bull's-eye in the sheet. In the old days they objected to these bull's-eyes and threw them away, but now there was rather a craze for them. The most economical pane of glass they could get by the Crown process was about 16 inches by 12, and they found that from the end of the 17th to the beginning of the 19th centuries the characteristic window pane was about that size. Generally they were arranged with the longest side upwards, but not always. A good idea of the effect of Crown glass was seen in the High Street, Exeter, and here some of the panes were put the other way about.

People, however, were still not satisfied, and wanted more light and larger panes, and attempts were constantly being made to get rid of the limitations imposed by Crown glass. The first quarter of the nineteenth century saw a reintroduction of the muffle process in an improved form. It was made on the Continent, and introduced into this country about 1826 by Mr. Hetley, of Soho Square, whose firm still existed as glass

merchants. Shortly afterwards its manufacture was taken up by Messrs. Chance, of Birmingham, who became the principal manufacturers of Crown glass. This improved method gave enormous advantages as regarded the size of the sheet obtainable, and also as regarded the price, and it rapidly superseded Crown glass until at the present day Crown glass was almost obsolete. Crown glass was not quite obsolete, however, and was still made to-day: he particularly mentioned this, because he was being constantly told that Crown glass was not being manufactured to-day, but that was a mistake. For all practical purposes, however, this muffle glass, made with various mechanical appliances and improved out of all recognition from the earliest made as regards details, but still in its main outlines the same process, was the glazing material of to-day. Somewhat earlier in date to the improved muffle glass there was introduced another method of getting rid of the limitation of Crown glass, which was the method used by the very earliest of window makers, the Romans, viz., the pouring of the glass out on to a slab and rolling it and casting it.

The Roman cast glass had been forgotten, but in its essential particulars the process of making plate glass was the same. The resulting product was, however, quite a different thing owing to the enormously improved method of manufacture. The funny thing was that not only was it the same process in the rough, but at the time glass-makers reverted to practically the same composition for their glass as was used by the Romans. They found that the Romans, by their empirical methods, arrived at a composition for their glass which was identical with that arrived at by the researches of modern chemists. If they merely took their glass and rolled it on a slab they had a material which was not perfectly transparent, as was necessary for their windows, but it was more or less translucent. It was no good for ordinary windows, but was used nowadays for such purposes as roofing and skylights. It was made very cheaply, and used, of course, to an enormous extent, and various kinds were made. He need not go into the different qualities, but there was one detail he would like to mention.

Nowadays the glass was cast on a huge iron table and rolled into shape by means of a ponderous roller: if the roller and the rolling-bed were plain, a sheet of glass smooth on both sides would be obtained. But by engraving either the roller or the table with a design (and in practice, for motives of economy, the former course was generally adopted) what was known as figured-rolled plate was produced. This glass was a wonderful production considered from the



mechanical standpoint, and was largely used for so-called decorative purposes, although in the lecturer's opinion its merits from this point of view were absolutely non-existent. One of the most wonderful achievements in modern window-glass making was wire-wove or armoured glass. A great disadvantage to the use of glass for roofing purposes was the consequences if it was fractured, and in case of fire especially, it might lead to considerable damage. Consequently, modern skill had tried to invent a sheet of

glass which would not collapse, and as a result they had this wonderful wire-wove glass. Iron netting was stretched across the table, and the molten glass was poured over the table so as to enclose the netting within its surface. He would not go into all the technical difficulties which cropped up in connection with the process, but at first sight it seemed impossible owing to the great difference in expansion between metal and glass; but these difficulties had been got over, and now this was a very important fire-resisting material. There were some splendid examples of wire-woven glass in the lights of the Hall in which they were assembled. By the plate-glass process which he had described it was impossible to make the glass quite transparent, owing to the glass which came in contact with the rollers getting chilled, and also it got an irregularity of surface from contact with the rollers and the table. It was possible, however, to convert it into a perfectly transparent sheet by grinding away the rough surface, and by doing this they got that wonderful material which they knew as polished plate. The sheet was first ground by means of machinery with sand, which removed all the real irregularities and reduced it to a plain surface, but dull and rough. Then in another machine it was subjected to further grinding with very fine emery-powder, which took away the rough surface and planed it to a true surface; and then, finally, it was taken to another machine, where, under the action of felt rubbers, it attained its final brilliant polish.

They would see, therefore, that there were two types of window glass available at the present time—the plate glass made by casting, and that made by the aid of the blow-pipe. Of the latter they again had two varieties—the muff glass, known in the trade as sheet (although, of course, this term really applied to all varieties), and the Crown. Which of these glasses they used in building was determined by various practical considerations. They had to consider the quality and texture, the sizes available, and what was most important, the cost. They should, or might, also consider the durability of it. The chief quality of plate glass was that it was absolutely featureless—its function was to entirely obliterate itself; it was purely utilitarian; it was a means to an end, and nothing more. But one of its chief points was that it could be obtained in very large sizes: sheets had been produced measuring 25 feet by 15 feet. He had not seen a sheet quite so large as that, but he had seen one very near to it. For the covering of large surfaces in one sheet one was absolutely limited to plate glass. It could be obtained in various thicknesses, from $\frac{1}{4}$ inch up to over 1 inch, although that generally used was about $\frac{1}{2}$ inch. For special purposes, such as ship and port-hole lights, it was made of an inch thickness, but they could not get anything like such huge sheets with that thickness. As to its durability, owing to the fact that the natural surface was removed, the polished surface was not so hard as the natural surface got with the blown glass. If it were only possible to use it as it came from the rollers, without polishing, it would be a wonderful material, because the natural chilled surface was much harder and more resistant to scratching and decay than the interior of the glass, which was exposed by the action of polishing. Therefore, it had always to be remembered that glass which was polished to a true surface was easier damaged and scratched in the operation of cleaning and so on.

As to cost, polished plate glass could be obtained in three qualities. Although constant improvement in mechanical skill and modern devices had pretty well obliterated faults, still, there were always imperfections cropping up which could not be entirely got rid of, and so the plates as they were made were subjected to sorting, and were generally divided into three grades—the ordinary quality, the best quality, and the very best quality, the latter being chiefly used for mirrors. Price varied considerably, according to the quality of the glass and to the size of the sheet, for it was much more difficult to make a large sheet, and also more difficult to get a large sheet absolutely perfect. Very often a large sheet of polished glass when finished would be found to have an imperfection in the centre, and it had then to be cut into small sheets. The ordinary price would run from somewhere about 1s. a foot in the small sizes to getting on to 5s. a foot and often more in the very large sizes. It was a wonderful thing that it could be made for anything like this price, and prices had come down enormously as time had gone on. Up till 100 years ago a sheet containing 100 square feet was looked upon as a masterpiece. If they took a sheet 12 feet by 8, which would contain 96 square feet, it would not have been possible to have made such a

thing until about 100 years ago, and some time after that the cost would be about 200l., whereas to-day such a sheet could be obtained for less than 50l. It was a marvellous tribute to the skill of modern civilisation that such sheets could be produced, and it was hard for anyone not familiar with glass working to realise the enormous difficulties which had to be overcome in the manufacture. The more they knew about glass the more they would marvel that such things as these huge polished sheets of plate glass should be possible.

Although in a rough outline the process of making sheet glass was exactly the same to-day as in mediæval times, yet in the details it was very different. All sorts of elaborate contrivances had been introduced for getting rid of reaminess, removing all traces of colour, and getting the sheets perfectly flat and plain; but the best sheet glass which was ever made never entirely eliminated these defects, and there was always in batches of sheets a number not perfectly even in thickness, or not perfectly flat, or with air bubbles, and so on. So as with plate glass, it had to be sorted into qualities. What were known as "thirds" and "fourths" were used for glazing generally, although sometimes the best builders used "seconds." The "best" quality was almost exclusively used for picture framing, and above that they had the "best polished." They had a still further quality, which was practically a variety of plate glass—it was ground down and polished like plate glass, and was known as "patent plate." It was blown glass, but had all the virtues and defects of plate glass. As to size, they could get sheet glass 90 inches by 30, which was the largest he had ever seen. About 3 feet square represented the average limit. The great point of this sheet glass was its very low price, but, of course, the cost varied greatly according to quality. A good many people did not seem to realise that, and only the other day an architect was telling him that he had great difficulty in getting good sheet glass. What usually happened was that the architect said he wanted the best, and then put in his specification a price which was rather a fine cut for "thirds," and so the builder supplied "fourths." The "patent plate" was about as expensive as ordinary plate glass, and "polished best" was about as expensive as Crown glass.

The "imperfections" of the ordinary sheet glass used in glazing gave it a certain distinctive character which was not, however, altogether pleasing, and whilst it was greatly superior to plate glass from this point of view it was much inferior to Crown.

The charm of Crown glass was its wonderful texture. It was not perfectly flat, and that caused a peculiar distortion when the light was reflected from it which was much more pleasant than that got from sheet glass. He had attempted in the slides shown to illustrate the difference between the various types of window glass as regarded their texture, but had found it difficult to do this satisfactorily; anyone who cared to do so could, however, readily verify his statements by comparing the effect of the windows in old and modern houses. Houses retaining their original Crown glass could be seen in all old towns and in many parts of London.

They also got a brilliancy by the process of spinning glass which could not be approached by the artificial process of polishing, and they obtained a hardness. Whilst he did not suggest it should be used in ordinary houses, yet he did suggest that in the repair of old houses one should think whether it would not be advisable to revert to the use of Crown glass, especially when it was a case of restoring a building where such glass still existed. He was looking at Mr. Perks' wonderful restoration at the Guildhall, and pointed out that the only thing required to make it perfect was the use of Crown glass in the new portion.

It seemed to him that one of the greatest difficulties an architect had to face was how he was to carry off the effect of the huge, gaping voids filled with plate glass, and he must say the success of modern architects in doing this was most wonderful. But they must all feel the need there was as regarded windows for breaking up the surfaces so as not to conflict with the elevation of the remainder of the house, and of late years there had been a tendency amongst architects to revert to the old quarries and to try and induce their clients to have windows with leaded lights; and some exceedingly fine things had been done in that way. But there were a lot of difficulties in this use of leaded lights in modern work. The cement gave way, and the lights buckled and got out of shape, although in recent years that had been largely overcome by the use of lead with a bar of steel in the centre; but this was not entirely satisfactory.

There was also the great tendency for draughts with these leaded lights, and the great difficulty from the housekeeper's point of view of keeping them clean. The fact of the matter was that they had friction between beauty and convenience. It seemed to him these leaded lights were only practical under rather abnormal conditions, although he admitted they were exceedingly beautiful. Personally, he suggested that the divided sash offered a compromise—the sort of window they had in the eighteenth century, with squares about 16 inches by 12. This broke up the surface sufficiently, and at the same time they were practical, and large enough to be easily cleaned and had none of the disadvantages of leaded lights; whilst if their appreciation of beauty ran to paying 10*s*. a foot instead of 2*d*. they could get Crown glass to render the windows perfectly satisfactory and beautiful.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A MEETING of the Royal Institute was held on Monday, the 13th inst., at Conduit Street, Mr. Leonard Stokes, President, in the chair. Mr. H. T. Hare, the Honorary Secretary, announced the death of Mr. Arthur Basil Cottam, Associate, elected 1883. Also of Mr. John Merven Carrere, the distinguished American architect, who met his death in a street accident last week. Mr. Carrere was to have read a paper before the Institute this session, but finding that he could not be in England at the date arranged the paper was postponed till next session. Mr. Carrere's nomination as hon. corresponding member of the Institute was on the Council agenda for consideration at that day's meeting, and his untimely death has deprived the Institute of the honour of numbering among their members an architect so gifted and distinguished. A vote of condolence was passed to the relatives of Mr. Carrere.

Mr. J. A. GORCH, F.S.A., then read a paper, of which we give an abstract, on

The Burlington-Devonshire Collection of Drawings.

At a general meeting of the Royal Institute on June 27, 1892, this collection of drawings was first exhibited, and on December 17, 1894, they were by a declaration of trust placed in the custody of the Institute. To Mr. J. D. Crace is owed this valuable addition to the library. His own account of how the permanent loan of them came about is as follows:—

"On the death of the seventh duke (December, 1891) it fell to me to value the works of art in the several mansions; and in February, 1892, I was so engaged at Chiswick House, where was this collection. It was kept in four mahogany boxes; and when I came to examine them I found the drawings all mixed promiscuously in utter disorder.

"Lady Louisa Egerton, the late duke's daughter . . . invited me to say how they could be rendered more really serviceable, and I then told her quite frankly that I thought that such a collection in the keeping of the Royal Institute of British Architects could be made accessible to those to whom they were really of great interest.

"She undertook to talk the matter over with her brother (the new Duke). The result was that his Grace consented to make the architectural drawings a 'gift in trust' to the Institute (without power of disposal), reserving to himself Inigo Jones's drawings for scenery for the 'masques' of Charles I. These last are now at Chatsworth; but I believe that a few remain in the R.I.B.A. collection."

Attached to the declaration of trust is a schedule which enumerates 17 bound volumes of drawings, mostly by Palladio; and two boxes of miscellaneous drawings in number about 295. Mr. Crace concludes his remarks on these loose drawings by saying, "These boxes require careful sorting before any satisfactory list of the contents can be made."

It is these unsorted drawings which are the subject of the present paper. They have now all been sorted and arranged in an intelligible manner.

They are of very great interest, being connected largely with our own Inigo Jones, and his relative and assistant, John Webb. They throw some curious and, perhaps, unexpected light upon the relations of the two men.

The two most important collections associated with the name of Inigo Jones are those at the Royal Institute and those at Worcester College, Oxford. It is a curious fact that a careful investigation of both collections goes to show that they are both more closely connected with John Webb than with Inigo Jones. It is highly probable that they are the two halves of the same original collection.

The original Webb collection, which (if these conjectures are right) was thus divided, consisted mainly of Webb's own drawings, but among them were a certain number made by his venerated master.

The Institute's own collection illustrates in a most interesting manner the changes which had come over the methods of house-design as compared with what is to be found in the Thorpe and Smithson collections. But more important still is the light thrown upon three other highly interesting points:—

1. The draughtsmanship of Inigo Jones.
2. His relations with John Webb.
3. The authorship of the design of the second portion of Greenwich Palace, known as King Charles's block.

There are not many drawings left which are actually signed by Inigo Jones. In the Burlington-Devonshire collection there are five, all architectural subjects. But there are others bearing his handwriting, and these may safely be attributed to him. A study of these goes to show that neat architectural draughtsmanship was not his strong point. There are three, indeed (a porch signed "Inigo Jones fecit 1616," a certain house signed "Inigo Jones," and the west front of St. Paul's Cathedral, unsigned), which are surprisingly poor stuff for so great a man to have produced.

It is curious that of the five signed drawings two should give so inadequate an idea of the master's power. Two of the other signed drawings give the details of a gateway for Lord Lincoln at Weybridge. There is a certain amount of freehand drawing in one of these; and in those which follow it is still more in evidence, and the conclusion to which all these drawings point is that Jones was much more at home with his pencil and pen than he was with his tee-square and compasses. He was at his best in his sketches for carving, and particularly in those of the human figure.

We now come to the relations of Inigo Jones and John Webb. Jones was the uncle of Webb, and took the lad into his office in 1628, when he was seventeen years old. It is probable that Webb remained working with his uncle until the latter's death in 1652. Webb became a very excellent architectural draughtsman: and if the estimate of Jones's powers in this direction suggested by these drawings be correct, Webb must have been his right hand. Webb has always been regarded as a pale shadow of Jones. He himself had an unbounded admiration for his master. Evelyn speaks of him as "Mr. Webb (Inigo Jones's man)." But an unprejudiced examination of the Institute drawings and those at Worcester College leads to the conclusion that a little reputation ought to be added to Webb's stock, and, perhaps, a corresponding little deducted from that of Inigo Jones.

In speaking of the architects in the reign of George II., Horace Walpole says, "It was in this reign that architecture resumed all her rights. Noble publications of Palladio, Jones, and the antique, recalled her to true principles and correct taste."

The works of Jones to which Walpole refers were, no doubt, those comprised in the two volumes of Kent, entitled "The designs of Inigo Jones, consisting of Plans and Elevations for Publick and Private Buildings. Published by William Kent, with some additional designs, 1727." The first volume contains seventy-three plates, of which the first fifty-two are devoted to the great palace at Whitehall.

The second volume consists of sixty-three plates, of which the first fifty are of houses and palaces attributed to Jones. Then follow three of Lord Burlington's work. Then three of the west front of St. Paul's. The last seven are of a church attributed to Palladio.

The plates representing Jones's work are inscribed at the foot, in the left-hand corner, "I. Jones, architectus"; in the middle, "H. Flitcroft, delin."; and in the right-hand corner "H. Hulsbergh, sculp." Hulsbergh, therefore, engraved them about the year 1727 from drawings made by Flitcroft. But where did Flitcroft get his particulars from? Jones had been dead seventy-five years. Fortunately, we are able to answer this question, for we have not only Flitcroft's carefully-finished drawings, but also, in nearly every case, the original drawings which he transcribed.

Here comes the interesting point. None of the latter drawings are signed; many have no writing upon them. A few, however, have notes—dimensions, calculations, notes as to the proportions of the rooms and of the columns. The general impression conveyed by the drawings is that they were being designed by the draughtsman as he worked. Who, then, was the draughtsman? So far as the evidence of the writing and drawing goes it was not Inigo Jones but John Webb. Except one drawing of a house there is nothing among these drawings to suggest that Jones inspired Webb in any



GENERAL POST OFFICE, LONDON.—DETAIL OF ENTRANCE.

sort of way. A much more obvious source of inspiration is Palladio's "Architecture," wherein are many plans and elevations.

We now come to the question of King Charles's block at Greenwich, upon which the Burlington-Devonshire drawings throw much interesting light.

Those who are acquainted with the great hospital at Greenwich will remember that the main buildings comprise five principal blocks. Starting from the river, there are, first, two blocks (called after King Charles and Queen Anne), end-on to the river front, with a vast court between them. Beyond these are two other blocks with colonnades, each having a dome at one angle. Beyond these, again, on the main axial line, but at some distance, is the fifth block, called the Queen's House. This house was the first part to be built, and it has always been attributed, no doubt correctly, to Inigo Jones. It was finished in 1635 for Queen Henrietta Maria, wife of Charles I.

There is no evidence that any complete scheme for a large new palace was prepared by Jones or anyone else during his life-time, although some writers have assumed that there was such a scheme.

At the time of the outbreak of the Civil War, therefore, the palace of Greenwich consisted of the old building near

the river, and the new Queen's House at some distance from it. Ten years after Inigo Jones's death, Charles II. built the first half of the present block called by his name. The plans and elevations of the building itself and drawings of chimney-pieces, doorways, and ceilings are in the Institute collection, and they are all drawn by Webb. There is nothing connected with this block that can be assigned to Jones.

It is, however, a curious fact that the design of this building has always been attributed to Jones, although it was said that Webb carried it out from his master's designs. But in view of the evidence furnished by these drawings it is an idea extremely difficult to entertain.

In the first place there is no evidence that Jones had prepared a large scheme, reaching from the Queen's House to the river, for Charles I. There is a plan entitled "Mr. Webb's design for the Palace at Greenwich," which shows a building which was to consist of King Charles II.'s block, balanced by a similar block at some distance, and connected by a third of even greater extent, thus forming three sides of a vast court, of which the fourth was the river. This arrangement would have cut off the Queen's House from the direct sight of the Thames, but would have left it as a conspicuous object on the axial line of the new Palace.

As a matter of fact, the only portion of this design which was actually carried out was the one wing afterwards known as King Charles's block.

If we judge by what we see, and exclude hearsay, the credit for the design of King Charles's block at Greenwich must be transferred from Jones to Webb; unless, indeed, we feel ultimately compelled to re-transfer it to Palladio.

When an examination of these drawings and those of the sister collection at Worcester College has rendered one familiar with them it is not difficult to distinguish between the draughtsmanship and writing of Jones and those of Webb, and the conclusion forced upon the mind is that even in the present day much that is really Webb's has been attributed to Jones.

It is only right that the evidence of these drawings should be carefully weighed, and one result must be the conclusion that John Webb was not merely a pale shadow of Jones, but that he was a man of remarkable independent ability. King Charles's block has been highly extolled. "There is no doubt," one critic says of it, "that this was one of Jones's most successful and beautiful designs." We may still agree with the sentiment, but we must give the credit to Webb. And not only so, but Wren, too, it would seem, must share some of his fame with his less celebrated predecessor. Other authorities have agreed in bestowing the highest praise upon Wren for the magnificent disposition of the Greenwich buildings, some for the vast forecourt, still more for the masterly way in which the space between the next two blocks is contracted, thus enhancing the value of the vista leading up to the Queen's House. According to Webb's general plan, King Charles's block was to be balanced by a similar one across a vast courtyard. Curiously enough, there is also a rough block plan, showing King Charles's block (in ink) already built, another block to correspond on the opposite side of the forecourt (in red pencil), and then beyond them are indications of further blocks drawn nearer together, much in the way which Wren finally adopted. If this plan is Webb's then he adumbrated the very idea for which Wren is justly extolled.

(To be concluded.)

ILLUSTRATIONS.

LIVING ARCHITECTS: NO. 40.—SIR HENRY TANNER, I.S.O.
NO. 41.—MR. HENRY TANNER, F.R.I.B.A.

SIR HENRY TANNER, as all the world knows, is the principal architect to H.M. Office of Works, but it is not yet forgotten that he made his mark as winner of the Tite prize in the year 1878, and that he was a prominent member of the Architectural Association in his younger days. His works as a Government architect are many and distributed over the whole country, but his chief achievement is the new General Post Office, known as "King Edward's Building," of which we give several illustrations in this issue. Mr. Henry Tanner, a son of Sir Henry, has used well several opportunities of displaying his skill as an architect, both in London and out of it, Oceanic House, in Pall Mall East, being perhaps his most conspicuous work. He has also quite recently served his term of office as a highly-popular President of the Architectural Association.

THE GENERAL POST OFFICE.

IN the views we present of this great work we have elected rather to illustrate the architectural, we may say artistic aspect, of the building, although it will ever be remembered as the first important application of reinforced concrete construction in this country. Sir Henry Tanner has always had a penchant for the scientific side of architecture, and it is strictly in accordance with his character that he should boldly essay the introduction of reinforced concrete as a method of construction in a public building of the first importance, recognising the advantages that this method offers in such a structure as a General Post Office. The fronts to King Edward Street and Newgate Street are faced with Portland stone and granite. The interior of the public office and the entrance halls have been more lavishly treated than usual, as befits the principal post office of the British Empire. The walls are lined with Arni Alto, a veined Italian marble approaching white, with panels, dado, and door architraves of Irish green, while the caps, bases, and key blocks to the window arches are of kupronised plaster. The counter-front is also of Irish green marble with bronze panel mouldings and kupronised consoles. The telegraph writing-tables are constructed of bronze with plate glass writing-slabs and panels, while the ordinary writing-tables and the

counter have bronze moulded edges. The woodwork generally is of wainscot, oiled and well rubbed. The whole of the sashes to the two lower floors and to the sorting office block, with a few exceptions, are of steel, and those to the Newgate Street windows and to the ground floor of the public office are of gunmetal. Experiments were made with various plastering materials for internal work and as a result a rendering of Portland cement and sand, finished with Keene's, was used. The floors generally are of maple blocks, but those of the lavatories are laid with Ruabon tiles and the public office with white marble mosaic with bands of Irish green. The lifts, fourteen in number, are actuated by electricity, and their equipment was described in *The Architect* of January 6 (Supplement 2, page 17). The heating is effected by means of radiators, through which cold fresh air is carried and warmed as it enters the building. Hot water is conducted to the radiators by means of pipes from six calorifier centres, to which steam is taken from four Lancashire boilers. All the condensed water from the calorifiers is carried back to a large cast-iron receiver, and re-used for feeding the boilers. The hot-water services to the building generally are supplied from one large steam storage calorifier fixed in the basement. Patent automatic control arrangements are fitted to each calorifier, so that only just the actual necessary steam is used to keep the various apparatus working, thus avoiding waste. Kettles worked by means of live steam are fitted in the various dining-rooms on the top floor, giving a constant supply of boiling water. The fire main service consists of a 6 inch ring main fixed completely round the basement, with smaller branch pipes taken from same and carried up through the building, with fire extinguishing appliances attached ready for immediate use at several points on each floor. About 81,000 feet super of mastic asphalt were laid as roofing, skirting, &c., and about 18,000 feet super of compressed asphalt for the carriage ways, using from 600 to 700 tons of material. The interesting process of manufacturing Limmer mastic asphalt is as follows:—The pieces of raw mineral rock, weighing from a quarter to half a cwt. each, are put first into an asphalt crusher, where they are broken to the size of walnuts, and then through the disintegrator. The asphalt, being then ground to a very fine powder, is boiled in special cauldrons, worked by agitators, with a certain proportion of the very best bitumen (as flux), and when heated to about 400° Fahr. a proportion of 10 per cent. to 20 per cent. of fine Bridport grit is added to make gritted mastic. It is next turned out into iron moulds, and made into blocks, weighing half a cwt. each. On arrival at the job these blocks are broken up, put into small cauldrons with just sufficient bitumen (as flux), and when properly heated the mastic asphalt is spread over the concrete surface and rubbed with fine sand by hand floats. The following are the names of the contractors for the various classes of work:—Messrs. Holloway Bros., excavations, ferro-concrete and drains, stonework, plastering, plumbing, joinery, &c.; the Crittall Manufacturing Co., steel sashes, lanterns, &c.; Messrs. Henry Hope & Sons, steel sashes, brass and bronze finger plates; Mr. A. W. Elwood, railings to churchyard; Mr. W. S. Frith, stone carving; Messrs. Cash & Co., heating installation, steam mains, hot-water services and fire mains throughout; Messrs. Geo. Wragge, Ltd., gunmetal sashes, bronze beads for marble, bronze grille, and name plates; Messrs. H. H. Martyn & Co., plaster modelling, gates and railings, King Edward Street, public office counter, wood carving; the Acme Flooring and Paving Co., block flooring; Messrs. Tonks, Ltd., brass divisions to sorting tables, writing shelves in public office, grille in enquiry office, bronze telegram-form boxes, bronze ink stands; Messrs. Lee Bros., marble work; Messrs. R. A. Main & Co., cooking apparatus; Messrs. Diespeker & Co., mosaic and terrazzo paving; the French Asphalt Co., west yard; the Limmer Asphalt Co., roof and east yard; Standard Plating and Kupron Works, kupronised caps and bases, public office, kupronised trusses, &c., to counters, public office, kupronised spring shoes and pencil holders; the Bromsgrove Guild, electric street lamps, bronze electric light fittings, public office, posting boxes; Messrs. Waygood & Co., lifts; Messrs. J. & E. Bates & Sons, bag frames and rack, grip handles and plates, steel channels and spring cutters, steel enclosures; Messrs. Jones & Willis, gates and railings, Giltspur Street; Messrs. Foster & Dicksee, public office fittings; the Educational Supply Association, Messrs. Galbraith Bros., Mr. James Elder, Messrs. W. E. Blake & Co., Messrs. Ripper Bros., Messrs. King & Scarborough, Messrs. Russell & Sons, Messrs. Geo. Hammer & Co., Messrs. Siemens Bros., sorting office fittings.

THE ILLUMINATION OF INTERIORS.
By Professor J. T. MORRIS, M.I.E.E.
(Continued from page 50.)

PART II.
ARTIFICIAL ILLUMINATION.
COAL-GAS AS AN ILLUMINANT.

THERE are at the present time three methods of utilising coal-gas as an illuminant* :—

- (a) Flat flame, batswing, &c.
- (b) Incandescent mantle; low pressure.
- (c) Incandescent mantle; high-pressure systems.

The first of these is recognised to be wasteful, and is in a fair way to become obsolete except in special cases, while the last is undoubtedly a highly efficient means of illumination. A number of experiments on the Keith high-pressure burner were carried out at the East London College. It is not proposed to discuss at any great length in this article the relative efficiency of means of illumination; the reader is referred to the published results of these experiments, which appeared in the *Illuminating Engineer* for September 1908. The author is of opinion that, while improvements have been made in the durability of mantles since that time, the results there given can be taken as standard results obtained under strictly scientific conditions, as far as efficiency is concerned.

There is one point to which the author particularly desires to call attention at this juncture; that is, the relation between the efficiency of gas illumination and the calorific value of the gas employed. If we take an electric incandescent lamp and use it on any electric supply whatever, providing the voltage applied to its terminals is the same in each case, we shall get absolutely identical results both as to light and consumption of power. This is by no means the case with coal-gas. In the tests referred to above, a Keith high-pressure lamp was tested first at the East London College and then in North London. The candle-powers obtained were 425. and 680. respectively. It may be added that in both cases the lamp was adjusted by an expert; most of this difference was therefore due to the difference in quality of the gas supplied. Seeing that practically all coal-gas is now used for its calorific value, whether it be in incandescent burners, gas-stoves, or gas-engines, it seems only right that the consumer should expect uniformity of supply. The now obsolete "illuminating power of the gas" as specified by the Board of Trade should be discarded and a heat basis substituted.

ELECTRIC LAMPS.

Coming to electric lamps, the following table gives the relative consumption of different methods of using electrical energy as an illuminant :—

TABLE VII.

Type of Lamp.	Watts per C.p.	C.p. per Watt.
Carbon	3.5	0.29
Tantalum	1.9	0.53
Tungsten	1.3	0.77
Helion	1.1	0.90
Arc (open)	1.0	1.0
Flame arc (globe on)	0.4	2.5
Flame arc (globe off)	0.26	3.8

The great increase of efficiency obtained by the use of metallic-filament lamps will be observed, and also the very considerable loss of efficiency brought about by the globe which is necessary with such lamps as flame arcs.

A lamp which really conforms to the criterion for proper illumination given previously (*i.e.*, an illumination in which the source is entirely shielded from the eye) is the inverted arc lamp. Where this lamp is used it is particularly necessary that the ceiling above it should be white. When used in workshops it is desirable to place light boarding above the lamp and to see that this reflect-

* The subject of the use of petrol as an illuminant is dealt with by Professor O. A. Smith in this Series.

ing screen is whitewashed fairly often; it pays to keep it perfectly white.
A lamp which calls for particular comment at the

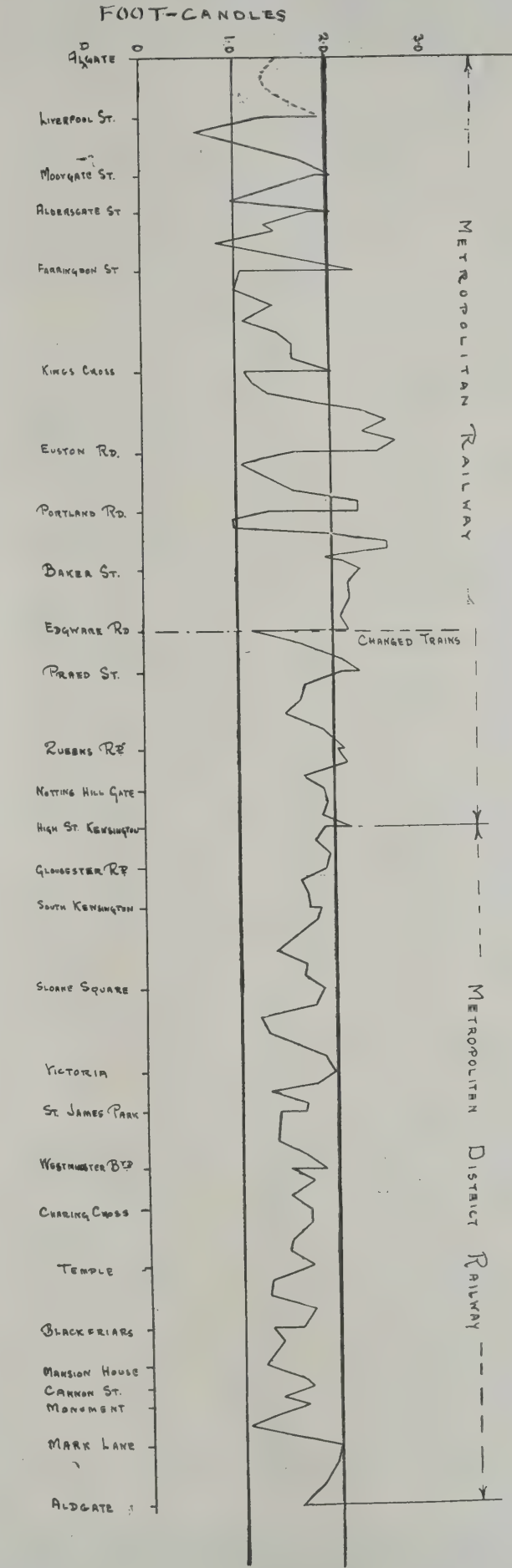


FIG. 7.

present time is the Moore vacuum tube. In this lamp an electric discharge is obtained through a long vacuous tube passing right round the room. The very high voltage

necessary is obtained by means of a small transformer. It is well known that when a vacuum tube has been in use for some time the small quantity of gas contained in it tends to become absorbed. In the Moore vacuum tube an ingenious contrivance automatically supplies small bubbles of carbon dioxide to the tube to make up for the loss caused by this phenomenon.

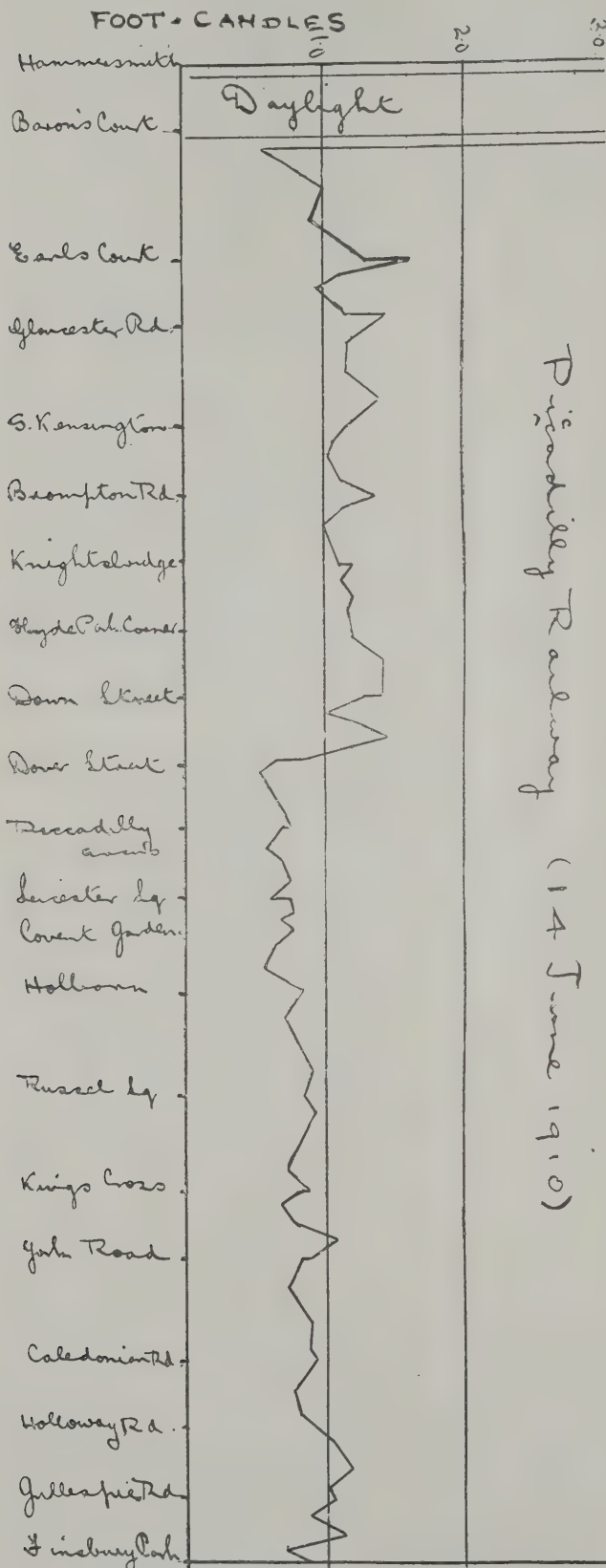


FIG. 8.

The only reason for mentioning this particular lamp is that it has not the dazzling effect met with in other sources of light. There is probably less strain in looking at these tubes when working than in looking out of the window.

We often speak of some lights as "dazzling," and of

others as "soft." The chief determining factor which decides this point is what is known as the "intrinsic

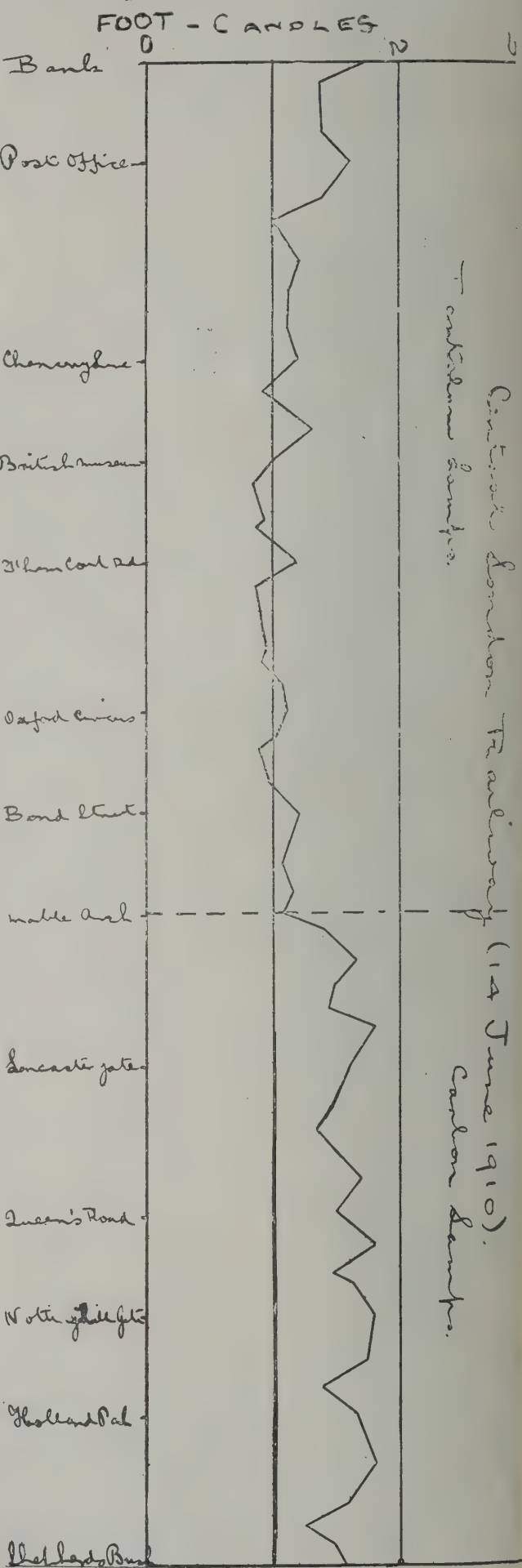


FIG. 9.

brilliance" or the candle-power per unit area of source. The following figures show the comparison between the various sources on this basis:—

TABLE VIII.

Sun	100,000	c.p. per sq. cm.
Arc	16,000	" "
Tungsten lamp	150	" "
Tantalum lamp	67	" "
High-pressure gas	25	" "
Carbon filament lamp	16	" "
Flame arc (with 10-inch globe)	3	" "
Low-pressure incandescent gas	3	" "
Flat-flame gas	1	" "
Kerosene lamp	0.5	" "

If we look at a lighted Tungsten lamp for a short time, when we turn away we can still see a kind of image of the filament on the field of vision. Such a phenomenon is very annoying, and a light which causes it should certainly be provided with a shade. Probably all lamps having an intrinsic brilliancy exceeding about ten to twenty candle-power per square centimetre come under this category. On this basis, although the high-pressure gas lamp is better than the metallic filament lamp, the author is firmly convinced that these should be shaded

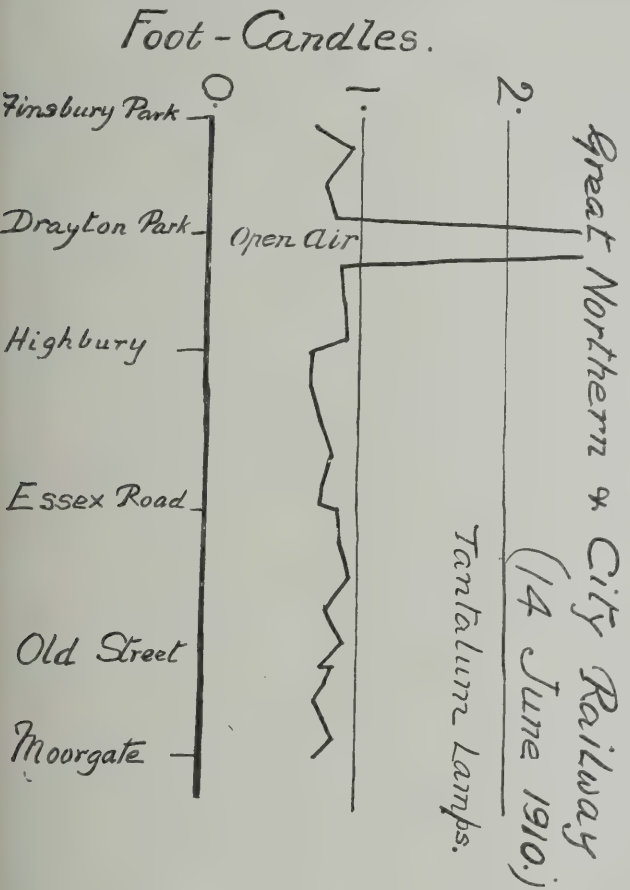


FIG. 10.

and possibly even carbon filament lamps also. Up to the present it has been the practice for gas engineers to have high-pressure gas lamps, when used for street illumination, provided with clear glass lanterns.

FLUCTUATION OF ILLUMINANTS.
The next question to be considered in connection with efficient illumination is that of fluctuation. Anyone who has had to read by an unsteady or flickering flame or by the light obtained from an electric generator driven by a badly governed water-wheel, internal-combustion engine, or other prime mover of which the speed varies to any considerable extent, will have noticed how annoying the changes of light become.

FLUCTUATIONS OF LIGHT ON ELECTRIC RAILWAYS.
With the object of ascertaining to what extent the light varies on electric railways and tramways the author took a series of journeys with one of his students to assist him on some of the principal routes in London. In each case the Trotter photometer was used, and the screen was held at about the height at which a newspaper

would ordinarily be held when being read in the train. Figs. 7 to 11 show the results of these experiments. The illumination in foot-candles is plotted on a distance base as far as could be judged by the positions of the stations.

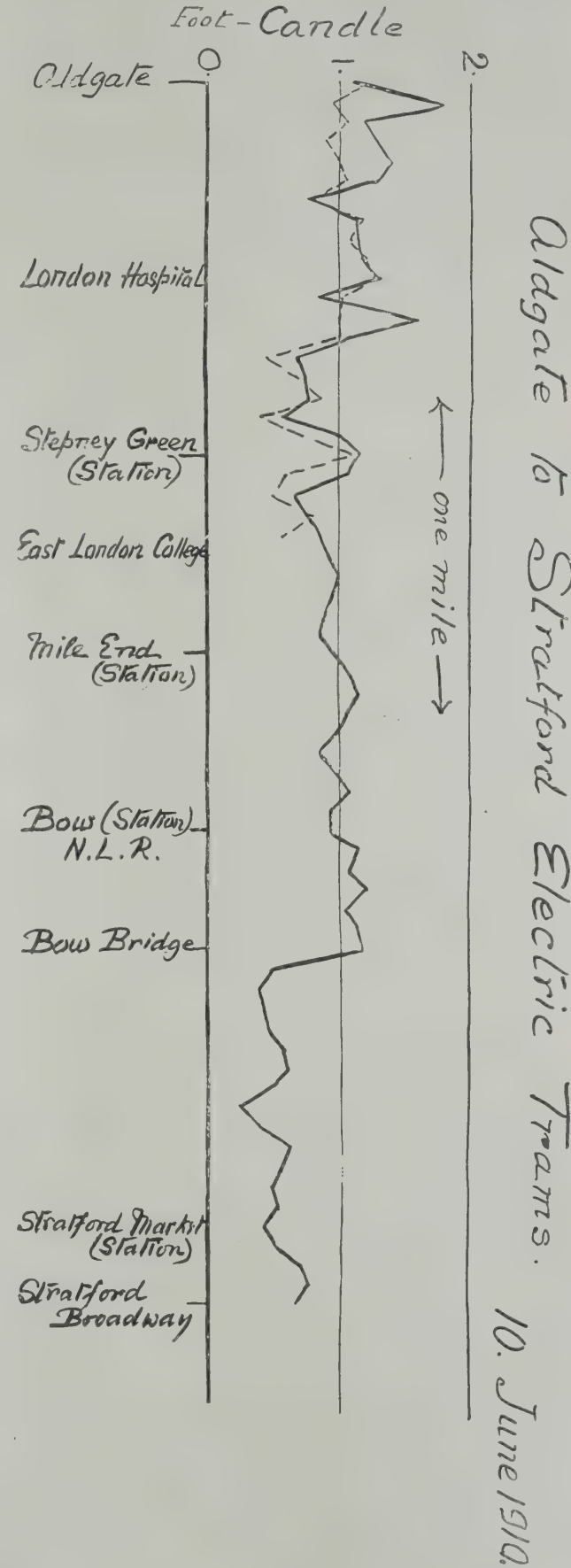


FIG. 11.

Here again the wide fluctuations will come as a surprise to many, as, excepting the very sudden changes brought about when the train starts from rest, one is not conscious of very marked variations in the light. It will be observed that, roughly speaking, the illumin-

ation in an electric train varies between one and two foot-candles. The Piccadilly Railway on the occasion of the test showed the least fluctuation, and here the average illumination was 0.9 foot-candles. Similarly it was noticed on the Central London Railway that where the illumination approached two foot-candles there was an impression of rather brilliant lighting. It can be taken, therefore, that for train lighting, provided the fluctuations are within reason, an average illumination of one foot-candle is good.

The next point to notice is the greatly reduced fluctuation where metallic filament lamps are used. The reason for this is that, whereas a variation of 1 per cent. in the voltage on a metallic filament lamp causes a variation in the light of from 4 to 5 per cent., a similar variation in the voltage applied to a carbon filament lamp causes a variation of from 6 to 7 per cent. in the light.

Some results obtained from these tests are collected in Table IX.

TABLE IX.

Magnitude of Lighting Fluctuations in Trains and Trams.

Route.	Fig.	Type of Lamp.	Illumination in Foot-candles.		
			Maximum.	Minimum.	Average.
Piccadilly Railway	8	carbon	1.7	0.55	1.0
Gt. Northern and City Ry. .	10	tantalum	0.95	0.65	0.8
Central London Railway—	9				
Eastern half	—	tantalum	1.7	0.85	1.0
Western half	—	carbon	1.8	1.3	1.6
Metropolitan District Ry .	7	carbon	2.0	1.05	1.6
Metropolitan Ry.	7	carbon	2.6	0.6	1.6
Aldgate to Stratford trams	11	carbon	1.75	0.28	1.0

The curve obtained on the Aldgate to Stratford trams shows much greater light variations than are experienced on the railways. East of Bow Bridge it will be noticed that there is an unusually large drop in the light. This is probably due to the feeding system being somewhat at fault; the author understands that this is to be remedied in the near future. In passing it may be mentioned that while the lighting at this portion of the line is certainly poor, it is by no means so bad as is tolerated on some American tramways. The author recalls how on the occasion of the International Exhibition at St. Louis the service of cars was so frequent and each car overloaded to such an extent that the lighting fell to a point where the striking of a match would have made a marked improvement.

(To be concluded.)

ROYAL ACADEMY LECTURES ON ARCHITECTURE.

THE fourth and last of the course of architectural lectures at the Royal Academy by Professor Reginald Blomfield, A.R.A., was delivered on Thursday, March 2, when the subject was "Henri IV."

The result of the civil wars had been, said Mr. Blomfield, to reduce France to a condition of unparalleled exhaustion. The nobles were impoverished, and it was reckoned in 1605 that half the properties of the kingdom had changed hands, many of them passing into the possession of the sons of wealthy tradesmen. In addition, the aristocracy no longer felt the old interest in the homes of their fathers. The architects had to reckon with the taste of a lower rank of society; of people without any particular ambition for magnificent building. The curious provincialism of French architecture at the beginning of the seventeenth century was probably due as much to this lower standard of taste as to actual impoverishment. Henri IV. and his ministers were at their wits' end to find money. Yet in the few years before his assassination the King's genius evolved those conceptions of civic architecture and of the training of artists which ultimately enabled France to establish its ascendancy over the civilised world.

Henri IV.'s first great undertaking was the completion of the gallery connecting the Louvre within the city walls with the Tuileries outside the walls. The preliminary step was to complete the little gallery, which appears to have been done in 1600. Its internal decoration was carried out under the direction of Antoine de Laval, a geographer who banished the heathen mythology of Primaticcio and his

fellows in favour of "the whole apparatus of architectural ornament, the effigies of the sixty-three kings of France, lodged each in a different portico," between the windows. Louis Metezeau is one of the four claimants to the honour of having designed part of the Grande Galerie, but it is more likely that Du Pérac was the architect. The two other names given are Plain and Fournier, but these were only builders. Du Pérac really belonged to the generation of De l'Orme, and this would explain the curious character of the design of the first part of the Grande Galerie. It is learned and scholarly, but it is trifling in scale and, compared with the works done by Bullant and De l'Orme, seems a throwback of two generations. The second part was almost certainly designed by Jacques Androuet du Cerceau the second, and he turned his back on Du Pérac's design. He used an order twice the size of that of the earlier designs, and produced work that was more attractive and even more reasonable than anything yet done at either the Louvre or the Tuileries. Despite faults, there was a largeness of treatment which carried on the tradition of Jean Bullant. Du Cerceau helped to bridge over the gap between the generation of De l'Orme and that of Lemercier and the able architects who were to make the great advance.

Not only did Henri IV. complete this gallery, but he contemplated a vast scheme for uniting the two palaces on the north side also—a scheme not carried out till the time of Napoleon III. It is a striking testimony to his genius and to the progress of French architecture made in his reign that such a conception as this "grande cour admirable" should have been possible. Henri IV. was no mere building amateur, for he built with a purpose as definite and statesmanlike as that of Augustus Caesar when he reorganised Rome in the early days of the Empire. The words of the letters patent of 1608-9 confirming the privileges of the artists of the Louvre prove that the King was deliberately endeavouring to re-establish the arts in France by collecting a number of the best workmen and most competent masters, "not only for our own use," he says, "but also that they may serve as a nursery of craftsmen who may spread the knowledge of the arts throughout our kingdom." Moreover, Henri IV. employed French artists in preference to foreigners. All his architects were Frenchmen; so too were the sculptors, except Franguevillé and Bordoni. In fact nearly all the ideas under which the modern tradition of French art has been built up originated not with Louis XIV. but with Henri IV.

The same far-seeing policy is to be traced in his various schemes for the improvement of Paris. His first object was to find work for the people whose trade had been completely disorganised by the civil wars. His second was to make Paris not only healthier and more convenient, but also the national centre of France. In the year 1600 the city's condition must have been deplorable. The streets were so narrow that even hand-carts could hardly pass between the overhanging wood and plaster houses. There were only some five or six insignificant public squares and two bridges. Every ten years there was a plague of some sort or another. Paris, says Poirson, "was little better than a common sewer" when Henri IV. took it in hand. Henri IV. was in fact the founder of France's great tradition of civic planning.

In 1600 and again in 1608 an ordinance was issued for the enlargement, alignment and paving of streets and forbidding over-hanging storeys. The Pont Neuf, with its *place* and the Samaritaine, formed the first great scheme. The present Place des Vosges was the next undertaking. The King's object was to let in light and air to the Quartier St. Antoine. The "Place Dauphine" was begun in 1607, and was intended to form a change and meeting place for merchants in the centre of the city.

The last, and on the whole the most comprehensive, enterprise was the memorable scheme of the "Porte et Place de France," whereby the national unity was to be embodied. The Place, which was entered from the north by the imposing gateway, was to consist of a semi-circular space 480 feet wide at the base, and set out with a radius of 240 feet. Round this space were set seven separate blocks of buildings of brick and stone, each divided from its neighbour by streets 36 feet wide. At a distance of 240 feet from the buildings was a street laid out concentrically with the semi-circle of the Place. The new streets were to be carried right away through Paris from north to south. Sully, the surveyor-general, started the work in 1609; but after the King's assassination it was dropped. The only record of it left is the birdseye view by Poinsart engraved in 1640.

The importance of what Henri IV. did to advance French

architecture has, said Mr. Blomfield in conclusion, been much under-rated. He was the first French King after Francois I. to take any genuine interest in the arts, and it was due to his impulse that French architecture began to recover its tone and regain its place in the line of genuine development. In the largeness of his conceptions and the statesmanlike patriotism of his aims Henri IV. was far ahead of his time.

NOTTINGHAM ARCHITECTURAL SOCIETY.

A MEETING of this Society was held on Tuesday, February 28, at 64 St. James Street, at which there was a record attendance.

In order to give members an opportunity of social intercourse Mr. A. N. Bromley, a past president, invited the members to tea, and a large number accepted his hospitality. A general meeting afterwards took place under the chairmanship of the President (Mr. Robt. Evans, junr.), and Messrs. W. Bond, L. L. Bright, E. H. Child, F. W. Gregory, F. E. Littler, and W. H. Taylor were elected members, and Messrs. H. E. Crossland and E. A. Smith were elected as associates. Other business having been disposed of, Mr. A. N. Bromley then read the following paper, entitled "Water Colour as an Aid to Architecture":—

My reason for reading a paper on this subject is to try and impress upon this Society the importance of the study of colour in conjunction with other studies necessary for the development of that art which we are proud to follow as a profession.

It may be said that an architect has so much study that it is impossible for him to become proficient in water-colour drawing as well as in other duties which he is called upon to perform, and that it is impossible for him to find time for everything.

It is somewhat difficult to reply to this statement when such subjects as construction, various styles of architecture, the study of planning of various descriptions, and a certain amount of engineering, surveying, and building law are essential. My suggestion is, therefore, that water-colours should be taken up as "a pleasure," and if this is done it will be found that not only will it become an enjoyable recreation, but it will add considerably to an architect's resources. Now I should like to point out that half the difficulty of water-colour is surmounted by good drawing, and this should be already accomplished by the architectural student. Good drawing is a serious difficulty which the ordinary student has to face, but this being already mastered by the architectural student the colour portion should soon become, without serious difficulty, both a pleasure and useful accomplishment.

Now most artists will tell you that good drawing, down to the very smallest detail, is essential to produce a good picture, and I can speak from experience that this is so, and that half the failures I have made, where muddy, unsatisfactory efforts have been produced, have been the outcome of careless drawing and from not understanding the meaning of the construction of the subject I was delineating.

Take, for instance, such things as trees and shrubs. Failure will seldom result if the tree is understood and carefully drawn.

The student is often led astray by seeing a few clever touches introduced by a master hand, which gives a better effect than even days of his own laborious work, but there should be no misunderstanding on this point. These simple touches, which are so effective, are the outcome of perfect drawing and great experience and a thorough knowledge of the subject delineated. Possibly only a shadow may be given, but behind it all is the perfect outline, which may not even be seen. I cannot, therefore, impress this too strongly, that to make a success a perfect outline must be secured, down to the very stones at your feet in the foreground, and even the weeds which may constitute a portion of it. I think one of the reasons why water-colour is not popular with architects is due to the fact that they are inclined to colour their own designs, whether they are suitable subjects or not.

It should be remembered that such subjects as public buildings and buildings of street frontages require a master hand to make them really successful, and even then only half-tones are more usually attempted. The reason of this difficulty, I think, is the fact that little variety in colour can be obtained, and the surroundings are often restricted and wanting in colour. This does not apply to country subjects where the surroundings are more congenial and are

more suitable as water-colour subjects. I am afraid our lady clients do not attach much importance to architects as colourists, and seldom consult them when it comes to the selection of delicate colours; they consider that they only should be consulted. Now, I must admit that some ladies are exceedingly clever with colour, and often produce very pleasing effects in drawing-rooms, &c. They are constantly matching colours and studying effects in dress and in the house, and they are quite at home in making delicate combinations of colour; but when it comes to the general decoration of the building the architect ought to be the director of the general scheme of colour in relation to his materials, and if he is thoroughly conversant with colour combinations he is more likely to be consulted with deference, and better results will undoubtedly be obtained. Now, my contention is that a study of water colours will prove an undoubted help in assisting the architect, not only in the completion of the interior of his buildings but also in the selection of his materials for his external work. There is every prospect that this question of colour will in the near future be a matter for much greater consideration than at the present time. The buildings in our towns at present are so disfigured by the accumulation of soot and dirt that an architect is to be excused if he gives less consideration to colour than he otherwise would; but the day is not far distant, in my opinion, when, with the rapid strides now being made with electricity, all this will be done away with, and the next generation will, I trust, look upon a new world when soot and dirt will have become a thing of the past and good architecture where colour is a feature will have an opportunity of being better appreciated. It is therefore more than ever necessary for the young student to study colour. Apart from the business side of the subject, the extra enjoyment one derives from the study is undoubtedly great.

The ever-changing beauties of nature can be almost doubly appreciated, and colour and contrasts will be noticed which have been passed over by a student who has not hitherto taken up this engrossing subject.

I am much too modest a performer myself to show you *how* to do it, but I may at least tell you *what* to avoid. It would, of course, be advisable for the student to put himself in the hands of a first-class teacher, if he can be found; if not he must then work out his own salvation.

I will give you a few suggestions as to the best way of making a start:

Good materials are not expensive, and the difference between good and bad paper may influence the student considerably. If the student makes a failure of a certain portion of the picture he may, with the aid of good thick paper, retrieve the whole situation. In the first place, he should put the drawing away for a few days, and he may come back to it with quite an inspiration for improvement. He may try first repeated washings blotted off each time with clean blotting paper, and if this fails to remedy the defect I would strongly advise the whole unsatisfactory portion of the work being scratched out when dry with a sharp knife. Success will be almost sure to follow, as it will be known exactly what strength and tone of colour is required, and this will be washed in with confidence. The colour being placed on the paper at its full value a successful and perhaps brilliant effect will be secured, and the picture which yesterday was a disappointment may become a real pleasure to-morrow.

I suggest the following moist colours:—Cobalt, indigo, Antwerp blue, yellow ochre, cadmium, aureolin, rose and brown madder, raw and burnt sienna, light red, sepia, Van Dyke brown, and Payne's grey. Brushes of the best—not too small. My strong advice is, therefore, start with the *best* materials, draw the outlines carefully and thoroughly, and never give in.

The student must decide for himself what method of finish he should give to his picture. We all admire a dashing broad style, but I think the beginner should refrain from copying this style, at any rate at first, or carelessness will result. On the other hand, a finicky way may be acquired by introducing too much detail. It is indeed difficult to draw the line.

The beginner should be carefully cautioned against getting into a way of working in a smooth tea-tray style. This is often the outcome of working one colour over the other with too dry a brush, and all texture is lost. It also emanates from want of confidence, and sometimes insufficient drawing. I should therefore strongly recommend a full brush of colour being used; large full decided washes are the best which take a long time to dry. Softening should be avoided, and the sharp end of the colour should be left

where possible. When a tint must be added to, then the very greatest care should be given to placing the second tint upon the first, with the utmost delicacy, or the undertone will be rubbed up and a muddy, unsatisfactory effect will be produced.

The beginner's picture will be almost certain to lack variety, and he will be conscious himself of something dull and insipid. This will be caused by lack of variety. Nature abhors sameness, and even surfaces of colour which appear at first sight to be all one tint are, if carefully examined, full of variety, and it is the real artist who seizes upon these variations and emphasises them to bring them into his picture.

We now come to a very vexed question—namely, as to how much an artist should paint exactly what he sees.

A picture is a somewhat ideal rendering of one's impressions, but there is a great danger of carrying this too far, and if this is done the artist will be justly accused of trickiness. On the other hand, if he paints just what he sees, from foreground to sky, he may just miss making a beautiful picture.

Some pictures, however, are so palpably made up that one detects that they have been made up in the studio to a very large extent, and all interest is lost. I think you will agree, therefore, that the medium course is the best.

The following books will be found very useful to beginners:—A. Penley, Thomas Hatton, Thomas Rowbotham, and John MacWhirter. Many of the combinations of colour suggested by Penley are an undoubted help to a beginner.

Distance colours should be carefully studied, as they assist materially in giving depth to a picture. Colours such as yellow ochre, cobalt and the madders are very useful for distances.

Of all things green pictures are to be avoided, although some clever artists seem to be very successful with them, but they require strong contrasts to make them successful. I should, therefore, recommend the beginner to tone down his greens and bring out the warmer colours in nature to the fullest extent.

The sky will often be a trouble to the beginner, and I should recommend the architectural student to keep the sky quiet and grey in tone, with a little blue between the clouds.

Trees are so associated with architecture that they will be found to be worth studying carefully, and indeed they are almost part of the design of a country building.

Certain trees seem to suit certain styles of architecture.

N. E. Green's book on trees will be found very useful, although I do not agree with adding in the first instance one shade of the same colour over the other; in fact the architectural student should be specially cautioned to avoid this method of working not only in trees but in everything. A shadow is cooler than the high light, and although darker, is of a different colour from that in light. I much prefer Rowbotham's system for trees of mixing the shadows with the high lights of almost the full strength required, the shadows being, of course, cooler than the high lights. The two shades should be run together wet and mingling one with the other often produce very beautiful effects.

A common mistake with the beginner is to colour the tree first and touch in some branches afterwards. This should be reversed, and the delicate taper of the branches should be carefully drawn first, the tree being clothed with foliage afterwards, and the character of the particular leaf delineated, but on no account should too many leaves be indicated.

Foregrounds are frequently neglected, and the picture spoilt in consequence. It should be remembered that the foreground must of necessity take up a large portion of the picture, as a garden does of a house. There is often much wealth of colour in a foreground, and a little care in arranging it is well worth the trouble.

We now come to perhaps the most important detail connected with colour as it relates to an architect and his work, viz., the contrast of colour. If we study nature carefully, it will be found that she provides many beautiful natural contrasts, viz., red and green, yellow and purple, and orange and blue. Hatton points out:—"A sunset on the sea will often light up the sky with a rose colour, and the surface of the sea will show a greenish tone. At sunset yellow lights will also be thrown upon white buildings, which will give purple shadows," and these contrasts I have frequently noticed; but they, if in immediate contact and unless divided by another medium, are not always pleasing. For instance, I myself could never appreciate green windows and doors to a red brick building, but if a door-frame is painted white and the door green the contrast of green with the red at once becomes satisfactory.

I am afraid I have kept you too long, but the subject is a very fascinating one, and if I have done something to interest the members of this Society and persuaded them to give water colour a trial I shall feel then that no apology is necessary.

To illustrate his remarks Mr. Bromley exhibited on the walls a number of his own water-colours, the variety and delicacy of which were much admired; and he also handed round for inspection water-colours by various artists. In the discussion which followed Mr. Wallis, the curator of the Castle Art Museum, strongly condemned the impressionist style of painting as being a bad training for any art student.

Various questions having been answered, Mr. Sutton said they were greatly indebted to Mr. Bromley for his extremely practical and interesting paper. They also greatly appreciated his kindness in asking them to tea, and he offered Mr. Bromley their best thanks. The President, in submitting this to the meeting, remarked that the Nottingham Society had advanced rapidly during the past few years, and he was sure they were all impressed with the excellence of the paper read that evening.

ST. PAUL'S AND THE BRIDGES.

AN illustrated lecture was given on Thursday of last week at Carpenters' Hall by Professor Beresford Pite under the above title. The architectural assets of London were, he said, neither few nor mean; its vast collection of buildings included very many of individual value, and quite a considerable number of them were of supreme interest and decided beauty. London might perhaps be said to resemble the annual summer exhibition of the Royal Academy in that as a collection it is indigestible in quantity and individually uneven in quality. Unlike the Royal Academy, there was no preliminary approval required for the buildings of London providing for only the survival of the fittest. Nevertheless, there were in the midst of the metropolis as fine examples as are possessed by any capital of the world, whether castle for castle, cathedral for cathedral, an abbey of unrivalled beauty, chambers of legislature worthy of a world-wide Empire, and houses of a peculiar charm. All these things only need a separation from the time of their erection in order that their many qualities may be recognised and rightly praised. Let Londoners take heart as they think of such a group of mediæval monuments as Westminster Abbey, Westminster Hall with its glorious roof, the Tower, Temple Church, St. Mary Overbury, Southwark. These afforded enough Gothic art to be worthy of a pilgrimage by a Gothic enthusiast. Of the Renaissance period there are splendid early examples no less than of its late ones.

Liberty-loving Britons need to be taught the artistic blessedness of architectural despotism. The limits of the greatest achievement of modern ideals are the great municipal improvements. The river Thames provides the metropolis with a thoroughfare 1,000 feet in breadth which has scale and grandeur of line. We now hold such a position that without vanity our architectural horns may be lifted up and trumpets of defiance blown to the Continent. The effort of taking stock of the architectural beauties is worth making. It might be asked, "Is there not such an overwhelming amount of bricks and mortar that it would be vain to claim an architectural character for the aggregate?" It would be admitted to be possible for one dominating monument to control and impress a wide area of uninteresting landscape and reduce to breadth and scale an indefinite number of buildings. This is done for London by St. Paul's and the Thames.

What the Acropolis with its temple was to Athens St. Paul's, seated upon the top of Ludgate Hill, is to London. It might be asked again, "Is the scale of the church sufficient for the almost unlimited size of the city; has not the extraordinary development of the metropolis destroyed any possible relation in the scale of a cathedral planned two and a half centuries ago?" The answer is that St. Paul's is on a scale which can still dominate London. No one had ever averred that either the mammoth Crystal Palace or the huge and wonderful shell of St. Pancras Station had displaced the centre of the metropolis or supplanted the majesty of the amazing and simple dome which is worn crown-like upon the forehead of Ludgate Hill. But the greatest proof of the dome of St. Paul's being the embodiment of an ideal is that it exercises a practically universal appeal, and we may well doubt the mental equipment of anyone who is unmoved by it. The present Bishop of London truly said some years ago that the dome preached a greater sermon than

any words preached beneath it. Turner uttered a great truth when he said that St. Paul's was London.

The pilgrim in search of the beautiful may well be advised to ride on the outside of an omnibus going down Fleet Street and view St. Paul's on the ascent of Ludgate Hill. Even the somewhat awkward railway bridge adds a piquancy to the effect as a train steams across it.

Professor Pite then showed on the screen a series of views to suggest the effect of domes and water. Greenwich Hospital has an extraordinarily beautiful combination in the domes and the river. The Custom House at Dublin is one of those many exceedingly fine architectural groups possessed by the city which makes one's mind torn with doubt as to whether Edinburgh is really the most beautiful city of the Empire. The Trinity Bridge, Florence, is remarkable for its considered grace of outline. Other views showed Notre Dame, Paris, Newton Bridge, Cambridge, and Alexander III. Bridge, Paris. In displaying a design for a bridge across the Tiber made by Piranesi in the eighteenth century, Professor Pite suggested that a magnificent bridge of that character would be a worthy memorial to a great Sovereign and worthy of a great Empire and of a great capital. Although ardent mediævalists might wish for a mediæval bridge, one of that character would be impossible.

London possesses at least twenty bridges; of these, fourteen are public road bridges and seven are for railways. All have been erected within the past century, beginning with Waterloo Bridge and concluding with Vauxhall Bridge. The railway bridges belonged to the second half of the century. One could pass the bridges of the world in review without finding a pair of successful rivals to those works of the nineteenth century—to which due recognition had not been afforded—viz., Waterloo Bridge (completed in 1817) and London Bridge (finished in 1831).

In referring to the proposals for the new bridge, Professor Pite said he wanted to suggest how fine it would be to take a photograph of Waterloo Bridge and place it upon a photograph of St. Paul's from the river. There was only one place for such a bridge, only one site, upon which an architecturally noble causeway could be placed, and that was upon the centre of the axis of the cathedral. With the river and the cupola, and with the necessary width of some 80 to 90 feet, London would be in a position to offer a view unequalled by St. Peter's at Rome, and perhaps surpassing the fondest dreams of Wren's imagination. When Wren built St. Paul's old London Bridge was standing, and he planned his city with lines of noble access to the front and flanks of the cathedral. The opportunity had now come with our greater skill to throw a causeway across the river that would dignify the city, glorify St. Paul's, and crown London with a worthy architectural achievement. There was ample warning as well as encouragement in London's bridges. We have a heritage of extraordinary and wonderful architectural wealth to which we should awake, and of which we should entertain a proper appreciation on the highest public grounds. We have a river of extraordinarily beautiful proportions, in its magnificent width, in its grandly-curving plan. We have a cathedral upon a hill in the very arc of this river, and we want a bridge. "May our visions," said Professor Pite, "turn again towards the glories of London and Waterloo Bridges, and place such a grand causeway opposite to and leading up to and completing the scene at St. Paul's Cathedral!"

Professor Beresford Pite concluded by showing a series of photographs on the bridges, commencing with the Tower Bridge and ending with the suspension bridge at Hammer-smith. Each slide was accompanied by historical and critical notes.

MANCHESTER SOCIETY OF ARCHITECTS.

At the meeting held on Wednesday, March 8, Mr. J. H. Sellers read a paper on "The Architect's Use of a Library."

There are some people, Mr. Sellers said, to whom a library is dull and uninspiring. To architects it could be a great inspiration and help. There is no better relaxation than to turn from the drawing-board to one's books—"books," as Gissing said, "gentle and quieting books, noble and inspiring books, that will merit to be pored over not once but many a time." They would point out the true, if narrow, path.

It is doubtful if the old architects understood the history of art as we understand it to-day. If Wren could have studied the folios of Greek work we might have seen St. Stephen's, Walbrook, with the mouldings as refined and

the ornament as delicate as Greek work. Knowledge of history impresses upon us the fact that great styles are based on reason and logical construction, that buildings must fulfil their purpose. To know the history of architecture well we must know the history of the people, their religion, their commerce; we must trace out the intermingling of tribes and nations. Wide reading would bring us to this knowledge, and would aid us in the formation of an artistic character and a power of æsthetic reasoning. Architects should strive after culture in its true sense; not artificial or superficial accomplishment, but the natural and inevitable process by which a man comes into possession of his own nature and into a real and fruitful relation with the world about him; not the possession of information, but the absorption of knowledge such as would enable them to reject the untruthful, and to pass by the trimmings of styles that are dead. Too many books are written on taste, "What is Art?" and so forth. They were unprofitable and wearisome, and often the work of amateurs who do not practice, and are unable to put themselves into the position of the worker, and who read into buildings motives and causes which seldom had any existence.

Students should read great books—the Bible, the works of Shakespeare, Milton, Walter Pater, Ruskin, and Dante. They would lift us above thoughtlessness in our work, till we should "see visions of colour and light, of green fields and broad rivers, of palaces laid with fair colours, and gardens where a place is found for rosemary and rue."

UNIVERSITY OF LONDON LECTURES ON ARCHITECTURE.

EARLY Christian architecture was discussed by Mr. Banister Fletcher, at the British Museum, on Tuesday, February 28, aided by many beautiful views.

Rome was the great centre from which Christianity spread throughout the whole of the civilised world. The Emperor Constantine accorded to Christianity equal rights with other religions in the year 313 A.D., himself professing the Faith ten years later, and causing it to be adopted by the State.

In 324 he removed his capital from Rome to Byzantium; later, in the year 364, the division of the Roman Empire took place, Valentinian becoming Emperor of the West, and his brother Valens Emperor of the East. In 376 the Teutonic invasion of Italy began, but in 379 the Goths were partly driven out and partly subjugated to Rome by the Emperor Theodosius, under whom the Empires of the East and West were once more re-united, Constantinople being the capital.

The relations between the East and West are accountable for the strong influence that Byzantine art had upon early Christian art in general. Ravenna, owing to its situation on the coast and to the fact that it was the seat of the Exarch, or Vicegerent of the Byzantine Roman Emperor, more especially felt its influence, and it is probable that much of the work found here was in many cases executed by Greek workmen brought straight from Constantinople.

The early Christian period is generally taken as lasting from the time of Constantine, A.D. 313, to 1000. In the year 800 Charlemagne was crowned in Rome, the Holy Roman Empire dating from this period and the title being retained until the year 1800.

The temples of the Roman deities were often very small, being built merely as shrines to shelter the statue of a god or goddess, whereas the churches of the early Christians were erected to shelter a congregation, so that although in some instances actual pagan temples were converted to Christian uses, the type of building found to be most suitable to the needs of the new religion was the Roman basilica, or Hall of Justice. The existing buildings were not actually used for religious services, as these naturally were required for the purposes for which they had been built, but new halls, or basilican churches were erected for this special purpose.

The early Christians having been a much persecuted sect had but little money at their command, and when at last they were allowed the free practice of their religion they adapted and used any material at hand; thus we find in their churches old columns with capitals of various design, which had formerly been imported into Rome by thousands from every part of the Empire to adorn the pagan temples, used in a haphazard manner, regardless even of the length of the shaft, deficiencies in this respect being supplied by extra high bases, additional blocks of marble, or the entire omission of the base mouldings if too long. In Rome there

were over thirty early Christian churches, and most of them are still in existence.

In regard to the plan of the basilican church, it is thought by some to have been influenced by the Roman dwelling-house. The church of S. Clemente, Rome, dating originally from the fifth century, but rebuilt in the eleventh, is a typical example. Undoubtedly in early times the Christians would meet together for their services in the houses of their richer brethren, and those features which were found useful would be retained. The peristyle of the Roman house would appear to survive in the atrium surrounded by arcades of the basilican church, with its fountain for ablutions in the centre. The narthex was a covered narrow portion dividing the atrium from the church, and beyond which the catechumens were not admitted.

The church itself was planned exactly like a Roman basilica, having a wide nave, with aisles sometimes double; long rows of closely spaced columns which in the earlier examples supported an entablature; above this was a flat clerestory wall which was generally ornamented with mosaic, above which were the windows admitting light to the interior. In the later examples the columns were placed further apart and supported semi-circular arches which sprang direct from the column.

The early Christian basilican church was usually covered with a timber roof, thus differing from the later vaulted type of the Byzantine period.

At the end of the nave was a semi-circular apse with the bishop's throne in the centre occupying the position of the seat of the prætor in a Roman basilica; on either side, where in the hall of justice the assessors sat, were seats for the presbyters or members of the Council of the early Church. In the centre of the apse where the pagan altar stood was the altar for the Christian service, the priest or bishop officiating from the apse looking towards the nave, a custom retained to this day at St. Peter's in Rome, and all old basilican churches where the Bishop's throne has not been removed to the side but left in the centre of the apse.

Towards the fifth century, instead of facing the nave as hitherto, the priest officiated with his back to the congregation. For many centuries the altar was merely a table covered with a white cloth; the crucifix, a number of candles, and high screen only crept in little by little when the officiating priest no longer faced the congregation. The earliest example of this change of the priest's position is to be found in the church of St. Apollinare Nuovo at Ravenna.

The choir was separated from the nave by low walls or screens called cancelli, from which our own word "chancel" is derived. Within the screens, on either side, the two reading desks were placed, the Epistle ambo and the Gospel ambo; these were brought down from their original position on the immediate right and left of the altar in order that the Holy Scriptures might the better be heard by the faithful. This change also probably took place somewhere about the fifth century, together with the removal of the Bishop's throne from the centre of the apse to the side.

The upper part of the walls was usually lined with brilliantly coloured glass mosaic representing various scenes from the New Testament or lives of the Saints, whose symbolic emblems became quite an important feature in decorative art.

Openings were semi-circular, as seen in the church of S. Maria in Cosmedin (rebuilt 772), where the clerestory windows are round headed, and where the arches in the nave spring direct from the columns. When mouldings were used and designed afresh, they were merely a variation on the old Roman types. The pavement in S. Giovanni in Laterano has a geometrical design in marble; slices of old columns are used as centres, which are surrounded by bands twisted into intricate designs.

To illustrate these various features of early Christian art the lecturer showed views of the following churches with which he dealt in fuller detail than space here permits:—The church of S. Clemente, Rome, originally built in the fifth century and rebuilt in 1108; S. Paolo fuori le Mura, 380, rebuilt nineteenth century; S. Maria in Cosmedin, rebuilt 772; S. Sabina, Rome, 425; S. Maria in Trastevere, rebuilt twelfth century; S. Maria in Dominica, 817; S. Giovanni in Laterano, fourth century; S. Prassede, Rome, 827-24; S. Lorenzo fuori le Mura, 335, rebuilt 1216; the old basilican church of S. Peter's, Rome, erected by Constantine near the site of the martyrdom of S. Peter, which took place in the year 67 in the Circus of Caligula and Nero; S. Maria Maggiore; S. Agnese fuori le Mura, founded by Constantine; S. Maria in Ara Coeli; and S. Giorgio at Velabro.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.

AT a general meeting of the Society held on Thursday, 9th inst., when Mr. Sydney D. Kitson, F.R.I.B.A. (president), occupied the chair, Mr. W. H. Ward, A.R.I.B.A., read a paper on "The Renaissance Church Architecture of the Sixteenth Century in France."

It was a commonplace, he said, that the history of architecture was in most countries and ages the history of religious architecture. In the Middle Ages if church architecture were eliminated nothing coherent or, indeed, very important would be left. But at the time of the Renaissance western Europe had largely outgrown the tutelage of the Church, the idea of nationality was developing, and in England, Spain, and France the focus of national life was becoming a strong centralised monarchy.

The architectural expression of this state of affairs was to be found, therefore, in secular buildings and more particularly in the dwellings of the Sovereign and his Court. The architecture of France in the sixteenth century was essentially an architecture of châteaux, of the pleasure houses of a still half-feudal aristocracy.

Thus it was much more difficult to present a picture of church architecture of this period than of contemporary secular architecture, and excepting a short list of approximately complete buildings a history of the style must be compiled chiefly from additions and embellishments to Gothic churches; here a chapel, there a transept, elsewhere a vault or a portal, a tomb, a screen, or a rearedos.

St. Eustache, Paris, begun in 1532, was the largest and completest Renaissance church of the century in France, and although practically identical in plan with Notre Dame, it was designed as a whole from the first as a Renaissance building, its Gothic features being clothed with detail inspired from Italian sources.

The lecturer broadly analysed and compared the various parts of this church with contemporary examples elsewhere, and by means of a series of some sixty slides traced the gradual spread of Renaissance ideas—first in the detail and later in the general design—over the ecclesiastical architecture of France.

At the close, and on the motion of Mr. W. H. Thorp, F.R.I.B.A., seconded by Mr. J. H. Farrar, a hearty vote of thanks was accorded Mr. Ward for his paper.

OUR CONTEMPORARIES FROM OVERSEAS.

THE *American Architect* (New York) reproduces working drawings of some recent buildings by Mr. Donn Barber—the new Mutual Bank building, New York, and the Capital City Club, Atlanta, Ga. Photographic views are also given of the Technical High School, Newton, Mass., by Mr. George F. Newton; of the Dormitory, Pennsylvania College for Women, by Messrs. Alden & Harlow; and of the Shari Zedek Synagogue, Brooklyn, N.Y., by Mr. Eugene Schoen. An interesting illustrated article on "The Modelled Relief in Decoration" shows how sculpture is being associated with architecture in modern American buildings.

The *Architectural Record* (New York) has for its chief items illustrated articles on the United States Post Office, Custom House, and Court House, Cleveland, Ohio, of which Mr. Arnold W. Brunner is the architect; and on recent Philadelphia architecture, divided into two sections, City Buildings and the Suburban Dwelling and Country Villa. Mr. G. A. T. Middleton's series of articles on "The Evolution of Architectural Ornament" is concluded this month.

Berliner Architekturwelt (Berlin) tells a tale of what befell in a suburban competition, strictly limited to residents, which shows that even in Berlin all is not perfection in the competition arena. The two premiated designs for an Oberrealschule at Zehlendorf are illustrated. Two of the smaller new bridges of Berlin, one in stone the other in iron, the Brommy and the Köthener, are very good. Several examples of both town and country houses are illustrated.

La Construction Moderne (Paris) illustrates Felix Charpentier's monumental fountain, "Source Humaine," which was exhibited in last year's Salon des Artistes Français.

Moderne Bauformen (Stuttgart) is this month a monograph of the work of Stadthaurat Professor Hans Erlwein in the city of Dresden, the most important buildings being the new abattoirs and cattle market and a high school for girls. Professor Erlwein's work is notable for its restraint and dignity.



Photo by A. E. Walsham, 60 Doughty Street, W. C.

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The Architect, Mar. 17th 1911.

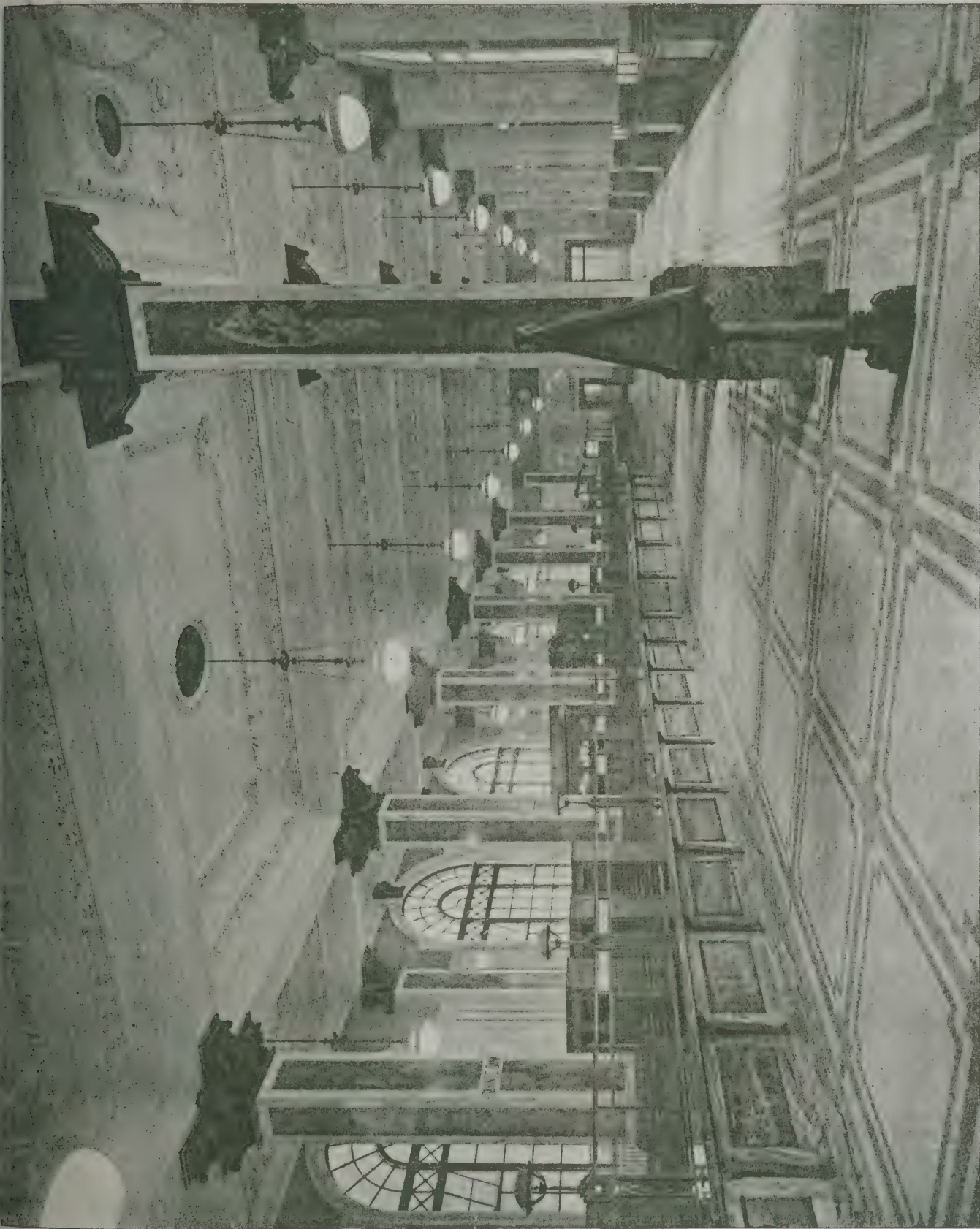


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The Architect, Mar. 17th 1911.



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The Architect, Mar. 17th 1911.



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THE NEW GENERAL POST OFFICE, SOUTH ENTRANCE LOBBY. PHOTOGRAPHED BY A. E. WALSHAM.

NEW GENERAL POST OFFICE: SOUTH ENTRANCE LOBBY.

SIR HENRY TANNER, I.S.O., Architect.



LIVING ARCHITECTS. No. 40: SIR HENRY TANNER, I.S.O.

CINSBURY



LIVING ARCHITECTS. No. 41: MR. HENRY TANNER, F.R.I.B.A.

The Architect.

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FORTHCOMING EVENTS.

<i>Monday, March 27.</i>
Royal Institute of British Architects : Business Meeting ; Election of Members.
<i>Tuesday, March 28.</i>
Nottingham Architectural Society : Social Evening and Award of Prizes.
<i>Wednesday, March 29.</i>
Carpenters' Company : Professor W. R. Colton, A.R.A., on "The Decorative Uses of Sculpture."
Royal Society of Arts : Mr. G. B. Heming on "Art Education in Jewellery, Goldsmithing and Allied Trades."
Edinburgh Architectural Society : Associate Meeting and Debate.
<i>Thursday, March 30.</i>
Architectural Association : Camera, Sketch and Debate Club Meeting ; Mr. H. W. Wills on "That Socialism means the Extinction of Fine Architecture."
<i>Friday, March 31.</i>
The Leicester and Leicestershire Society of Architects : Students' Evening.

THE ARCHITECTURAL ASSOCIATION SKETCH BOOK.

THE outstanding characteristic of the volume of the Architectural Association Sketch Book for 1910 is its value as a work of reference. A volume which at the price of one guinea contains amongst its seventy-two plates carefully-measured and well-executed drawings of the West Portico and Wellington Monument from St. Paul's Cathedral and the Church of Santa Sophia, Constantinople, is by this alone justified as a valuable work of reference.

But these subjects do not by a long way exhaust the measure of the more than ample return for the money that is presented by the contents of one volume of the A.A. Sketch Book. Work of a wide range of date is included, from the Tomb of Mausolus at Halicarnassos, assigned to B.C. 353, to the nineteenth-century Wellington Monument in St. Paul's Cathedral. Hence, the A.A. Sketch Book maintains its high position as a *répertoire* of information for the student of architecture. The pre-eminence of this position is due very largely to the high proportion of measured drawings compared with sketches that is preserved in the present volume.

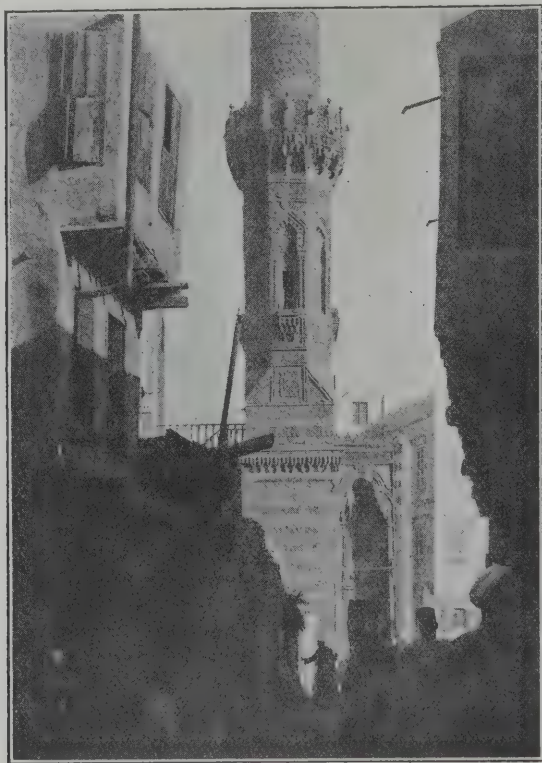
A valuable feature in connection with the measured drawings is that the Editors, MESSRS. GERALD C. HORSLEY, THEODORE FYFE, and W. CURTIS GREEN, have not scrupled to devote several plates to the adequate illustration of individual subjects. Thus we find five plates devoted to Borwick Hall, Lancashire; four plates to the entrance gateway of the Abbey of St. Edmund, Bury St. Edmunds, Suffolk; three plates to the Church of St. Peter, Claypole, Lincolnshire; six plates to the Wellington Monument; five plates to the West Portico of St. Paul's Cathedral; five plates to the Church of St. Peter, Peterstone, Monmouth; four plates to Sompting Church, Sussex; five plates to the Hôtel Carnavalet, Paris; three plates to the Church of SS. Sergius and Bacchus, Constantinople; and five plates to Santa Sophia, Constantinople. Each of these buildings is thus placed thoroughly and completely on record. As regards local distribution of the subjects forty-one plates are devoted to English buildings, nine plates to French, nine to Italian, and thirteen to architecture in Turkish lands.

Of the buildings to which considerable space is given, Borwick Hall, measured by Mr. F. H. SWINDELLS, is a typical Lancashire manor house of some importance and of the date A.D. 1560-1650, stone built and retaining much of its internal panelling and other fittings. The Abbey gateway at Bury St. Edmunds is a well-known fourteenth-century work, thoroughly illustrated by Mr. P. D. HEPWORTH. The Church of St. Peter, Claypole, is drawn by Mr. J. L. BERRY, and the date is given as thirteenth to seventeenth century. The plan shows a collegiate type of chancel and curious later extensions of the

north and south aisles of the nave. A finely-proportioned albeit somewhat slender tower and spire is at the west end and the whole church is one well worthy of study. The Church of St. Peter, Peterstone, is described by the author, Mr. W. ARTHUR RUTTER, as Late Decorated and Perpendicular, but the chancel and vestry are modern. This church has the usual western tower, the battlemented parapet of which is a good piece of design. The interesting Saxon church of Sompting, although considerably rebuilt and altered in later times, is well known as one of the most valuable pieces of evidence of the Early Romanesque period in England, and the thanks of antiquarians are due to Mr. F. A. CROUCH for his careful measurements. The Hôtel Carnavalet, by FRANCOIS MANSART, A.D. 1661, has been measured and well drawn by Mr. CYRIL A. FAREY and affords a good opportunity of comparison with the work of WREN at St. Paul's in the same volume. The Byzantine examples of the Church of SS. Sergius and Bacchus and of Santa Sophia, the former drawn by Mr. A. E. HENDERSON and the latter by Mr. J. B. FULTON, are particularly useful for study of the articulation and composition of these salient examples of the domed architecture of the sixth century in Eastern Europe.

The practice of including R.I.B.A. Studentship drawings in the A.A. Sketch Book is the cause of the reproduction of measured drawings of St. Peter's Church, Claypole; St. Peter's Church, Howden; St. Leonard's Chapel, Kirkstead; Rood Screen in Kenton Church, South Devon; the Steeple of St. Bride's Church, London; the Wellington Monument and the West Portico from St. Paul's Cathedral; the Hôtel Carnavalet; and perspectives of the Library of Trinity College, Cambridge, and Santa Maria della Carceri, at Prato, a total of nineteen plates.

The fashion for tinting measured drawings which prevails amongst present-day students, due no doubt to French influence in the representation of Classic and Renaissance architecture, is an unfortunate one from an A.A. Sketch Book point of view, as in the process of reproduction clearness, one of the first essentials of a measured drawing, especially when reduced in size, is sacrificed to a most regrettable extent. Perhaps the drawing above all others, though not a measured drawing, which has suffered in reproduction is Mr. ERNEST GEORGE's water colour of the Rialto bridge, which is now but a collection of meaningless splotches and falsified values. A better result might possibly have been obtained by a happier selection of tint, but the translation of water colour into monochrome is an operation that requires a considerable amount of judgment, knowledge and skill if even a moderate degree of success is to be attained. Plate No. 6 and the drawings of the Wellington Monument are instances in which the value of the measure-



MINARET IN CAIRO.

ment is largely obscured in reproduction by the overpowering insistence of the tinting. Comparison of these with the drawings of St. Peter's Church, Peterstone, attests the indubitable superiority of simple black line for measured drawings that are to be reproduced on a reduced scale. The present volume is less rich in specimens of fine draughtsmanship than have been some of those of preceding years, but Mr. HEPWORTH's pencil study of the Portail des Libraires at Rouen Cathedral and his detail from the Bury St. Edmunds gateway are good, and Mr. F. L. GRIGGS contributes two notable pencil drawings from Cambridge and Ely.

THE SALTING COLLECTION.

THE magnificent collection bequeathed by the late Mr. GEORGE SALTING to the Victoria and Albert Museum has now been arranged in accordance with the testator's wishes—"kept altogether according to the various specialities of my exhibits." The salient characteristic of the collection is the uniformly high standard of the various items included. Therefore, from the standpoint of a student who aims at designing or producing artistic things which he may reasonably hope will to-day find purchasers, the SALTING collection of *objets de luxe* represents rather the unattainable ideal for which he may vainly hope to obtain commissions than examples of the class of work for which he may expect to find a ready market. Only a millionaire could afford to fill his house with furniture and equipment of the quality that is here displayed.

The scope of the collection is an exceedingly wide one and embraces examples of practically the whole of the artistic crafts in every material; metal, wood, stone, pottery, glass, ivory, textiles, all are included, together with miniatures and engravings. And in each department we have the work of the best masters and often specimens of their best work.

Thus in the case of bronzes we have not only several examples of the work of the greatest of the Paduan bronzefounders, ANDREA BRIOSCO (1470-1532), but what is perhaps the finest example of the same master's equestrian groups—a warrior in richly-decorated armour seated bareback on a wonderfully-modelled horse. The Italian

bronzes as a whole are splendid specimens of the best work of the fifteenth and sixteenth centuries. A specialised group of metalcraft of the same period, to which, by the way, Mr. SALTING seems to have devoted especial attention, is that of medal-making, and here the collection is very remarkable. Although the largest portion of the SALTING collection of medals comes from Italian workshops there are sufficient specimens of German and French craftsmanship to afford a fair basis of comparison and study. Somewhat akin to medals are plaquettes, which may indeed be defined as medals of other than purely circular form and intended for incorporation in objects of utility or ornament.

Very interesting from an architectural point of view are some wrought-iron locks, keys, and caskets of fifteenth to seventeenth-century date.

Woodwork is not for the most part in this collection closely related to architecture, being principally illustrated by sumptuous articles of furniture, which we might describe as being too magnificent to live with, splendid examples no doubt of the expenditure of labour and artistic design, but who wants to live with furniture so covered with carving that there is scarcely an inch of plain, honest wood to be seen? We must except from this general criticism a couple of walnut panels from the district of Bresse, near Lyons—French work of the early sixteenth century, which are clearly of ecclesiastical origin and contain some excellent wood-carving both of conventional ornament and of figure-work in angels holding heraldic shields.

There are a few examples of beautiful jewellery work, including ecclesiastical as well as personal adornments; amongst the ivory carvings are some good examples of pastoral staffs, diptychs and other ecclesiastical accessories.

A considerable portion of the space allotted to the SALTING collection is devoted to Chinese and Japanese art, of which there are many examples of pottery, of metal-work, and of carving in wood and ivory, as well as of lacquer. The Chinese bronzes also include examples ranging in age from perhaps as early as a thousand years before the Christian era to the eighteenth century A.D. Of Japanese bronze-work there are also specimens, mostly of the work of the Seimin school, which flourished during the first three-quarters of the nineteenth century.

NOTES AND COMMENTS.

ARCHITECTURE is to receive its usual British treatment in the British Fine Art Palace at the Rome Exhibition this year to celebrate the jubilee of the United Kingdom of Italy. It is placed on an equality with black and white drawing, and is allotted 1,800 feet super. Sculpture has 3,600 feet super and painting 18,000 feet super. And architecture is politely termed the "Mistress Art." On the Continent there is an intelligent appreciation of architecture as an art. What will Europe think of British architecture which is thus relegated to the back-most of back seats?

THIS is the official description of the show of British architecture: "The Architectural Section illustrates the advance that has been made in domestic architecture in the more noteworthy buildings erected throughout the kingdom, and in such attempts at town-planning as have been permitted by an hitherto unenterprising nation." That is a nice epitome of the position of British architecture at the present day. We are thankful to be told that we have made an advance in domestic architecture, but we humbly prefer the advance in other spheres of the art which we fancy has been manifested in the designs for Liverpool Cathedral, the Wesleyan House at Westminster, Cardiff, and a dozen (at least) other municipal buildings. But we are not surprised. We understand that the Chairman of the Royal Commission which has organised the British sections in both Rome and Turin is Lord LYTTON.

THE President of the Royal Institute offers the services of that body to assist the artists who have generously made a proposal to prepare a scheme of decoration for the route of the Coronation procession, and refers to the part taken by INIGO JONES and Sir CHRISTOPHER WREN in designing triumphal arches for the purpose of great Royal processions. Now, a procession that is to be a successful pageant consists of two parts, the *mise-en-scène* and the cavalcade. While we think that architectural advice is desirable for the former, we must recognise that painters are particularly fitted to arrange the latter, but to produce an entirely harmonious effect, both must work together.

A VERY nice little handbook to Oxford has been prepared by EDWARD C. ALDEN, in which the historical, descriptive, and pictorial aspects of the University and City are treated in a manner that is not too abstruse for the amateur and sufficiently informative for the professional visitor, the notes on Oxford architecture being concise and yet critical.

PROBABLY not many of our readers are aware that "sunprints" have hitherto been produced almost wholly on paper "made in Germany," or at any rate of foreign origin. But this is not all. These alien papers are of very indifferent keeping qualities, and the architect who does not use up his paper soon after it is bought finds that he cannot get good prints from old stock. Therefore we are glad to have become acquainted with the Technical Paper Company, who supply paper which they assure us is "all-British," and for which they are ready to give a two years' guarantee. The papers the Company have at present on the market are ferro-prussiate, ferro-gallic, and an aquatone or sepia paper, and they are willing to supply either small or large quantities or to make sunprints.

METAL WORK.*

(Official Report.)

By MR. W. BAINBRIDGE REYNOLDS.

THE subject on which I am to speak to-night, viz. decorative metal work, is so large, that I fear I cannot in the time at our disposal attempt any comprehensive review of the theme, either from the historical point of view, or from that of the principles of design. The purposes to which the various metals lend themselves for decorative treatment are many, and the forms of design employed during the centuries of their use are just as numerous, so that a systematic commentary on the subject could only be kept within the limit of a long treatise.

I propose therefore this evening only to show you a collection of photographs, some of examples of various dates which appear to me to possess those qualities which make for beauty, and some of modern work with which I have myself been connected as designer and maker. With regard to several of the photographs I have made some rather random notes, which I hope may be of some interest.

The construction of supports for lights for artificial illumination has been in all ages confined principally to metal, either in a form suitable for suspension, or for projecting from walls, or for standing on floor, table, or ground. The evolution of lighting media from simple and primitive oil lamps, thence to candles, later to gas, and finally to electric light has involved from time to time new conditions and problems in design and construction.

The design of the supports for the light or lights for internal illumination depends primarily on their position in the space to be lighted, having regard to convenience and appropriateness.

In mediæval times the aim in the artificial lighting of churches was not, as it seems to be to-day, to cause an equal diffusion of light. Churches were then lighted with a view to æsthetic effect rather than to practical illumination. Light was obtained from very few points in the nave so that the shadows were cast in the aisles and transepts, thus giving the air of mystery which was sought by the old builders of churches, and at the same time enhancing the architectural effect. There were, no doubt, small lights in aisles and transepts, and in front of shrines and benediction

crosses. These added to the mystery of the gloom in the shadows. It is true that in those days there were no printed books, and the laity who assembled for worship and praise used a liturgy, psalms, and hymns, more or less well-known by heart, so that the practical illumination of a church was unimportant. It is a question whether in churches of the present day, at any rate those of the Anglicans, Roman Catholics, and Greek Catholics, where the liturgy should be known to the congregation, the modern system of uniform illumination does not make too much sacrifice of the æsthetic emotion, to which the aspect of a church should surely give rise.

The fact that, in the old days, illumination of a church was not aimed at, is shown in such a building as the cathedral at Chartres. Those who have visited that supremely beautiful church must recollect that on entering the western portal in the daytime it takes some minutes for the eye to become accustomed to the dimness, so that at first no detail of the interior can be discerned. This is owing to the fact that the many and vast windows are entirely filled with glass of the deepest and most gorgeous colours. It is obvious that the designers did not regard a church window as a means of illumination, but only as a part of a design conceived to promote the devotional sense.

Some old German churches still retain the old methods of lighting. At Quedlinburg, a church of the basilican type (that is to say, based, though a good deal developed, from the Roman basilica), the lighting is effected by only two candelabra of the small ring type, one in the nave and one in the sanctuary.

The ring candelabrum at Munster Cathedral in the sanctuary is of rather late fourteenth century type. This is perhaps not of very good design, but it illustrates the method of lighting. In this church, however, modern ideas seem to prevail, for there are modern gas standards and brackets in various places with abominable white opal glass shades.

The lighting of Lubeck Cathedral may be described as of the "haphazard" type. There are two candelabra of different sizes, of the kind known as Dutch spiders, i.e. one or more central spheres from which project many thin arms of S shape. In addition, there is a candelabrum of the "spire" or "fountain" type, a form which came into use when the Gothic style having the general lines mainly vertical had evolved from the semi-Classical or basilican form, in which the effect was horizontal. There is also a candle bracket projecting from the pulpit. We may notice in passing the beautiful wrought ironwork on the wood and iron screen which projects from the pulpit. The cresting is of delicate upright twigs of iron joined by a twisted cable, and the vertical bars between the wood pilasters of strands of iron twisted into a loose rope, and very decorative, but very simple.

In the church of St. Martin's, Brunswick, there is another example of the spider candelabrum. In this case it is one of three tiers.

The fine bronze candelabrum of the large ring type at the cathedral of Aix-la-Chapelle is evidently designed to form an intrinsic architectural feature, consonant with the lines and modified basilican form of the church. This example is of very early date—it is said to be of the time of Charlemagne, about the eighth century, and to have been the gift of the Emperor Barbarossa.

The gigantic "corona lucis" at Hildesheim Cathedral is a most interesting specimen of symbolic eleventh century work. It is twenty-two feet in diameter, and is intended to image the heavenly Jerusalem. The massive rim of copper gilt represents the walls of the city, and supports twelve turret lanterns. There were formerly, in the turrets and niches, figures of Old Testament worthies and the Apostles, and also figures representing the Graces and Virtues, but these were destroyed by the ultra-reformers in the sixteenth century.

There is a full-size model of this great work in the Victoria and Albert Museum. Another corona of the same type, but smaller, is in the choir of Hildesheim Cathedral. It should be noted that the church was originally an early basilica, but it has been faced with Renaissance work, so that the present architectural effect is out of harmony with the original corona.

Whilst on the subject of the principles of the lighting of churches I may say that the late Mr. Bentley, the architect of the Roman Catholic Cathedral at Westminster, asked me, before the building was finished, by what method I would propose to light it. It appeared to me that the appropriate method of lighting a church of the basilican type, such as that at Westminster, would be by vast coronæ

* A lecture delivered at Carpenters' Hall on March 15. Eighth the Series on "The Arts Connected with Building."

pendant, one from the centre of each of the saucer domes; in form and detail similar to, but possibly much more simple than those at Hildesheim and Aix-la-Chapelle.

I was interested to hear several years later a paper read by Mr. E. F. Reynolds, an architect who has made exhaustive researches in connection with the basilicas at Constantinople, in which he mentioned that it had been discovered that the ancient artificial lighting of the vast basilica of Santa Sophia at Byzantium, possibly in the days of its founder, Constantine the Great, in the third century, was by means of simple coronæ of varying sizes pendant from the dome; so I discovered that my scheme had been anticipated by many centuries. It is supposed that in the ancient lighting of Santa Sophia the lights were small glass lamps with floating wicks, grouped on circular chandeliers of twenty to two hundred lights each, the chandeliers being suspended from a series of concentric bronze rings suspended by chains from the dome. Single lamps are also suspended from the bronze rings, and some of the large lamps are enclosed in pierced metal balls, so that the light shines through the perforations.

Santa Sophia as at present has lights still arranged on somewhat similar principle, but without the series of bronze



ELECTROLIER, LIVERPOOL CATHEDRAL
(Designed by Mr. W. BAINBRIDGE REYNOLDS in conjunction
with Mr. G. GILBERT SCOTT.)

rings. The actual lamp fittings are comparatively modern. It takes a large staff of men quite an hour to light so many lamps. Even in the present arrangement with fewer lamps, there must be quite fifteen or twenty thousand separate lamps. I imagine that they are, of course, quite dim, similar to the light given by sanctuary lamps, such as *one* sees in churches in Europe. You may think that my view with regard to the correct way of lighting churches in isolated groups of lights was not that of the Byzantines, but you must recollect that their lighting demanded a more or less all-over scheme, because of the extreme dimness of their little oil lamps; whereas in the subsequent mediæval churches candles were in common use, and gave much more light than the small oil lamps of the Byzantine period. Furthermore, the Byzantine architecture being more Classical in tendency than the Romanesque basilicas or the mediæval churches had, in the interiors, less sense of mystery, and the emphasizing of the shadow in the architectural scheme (when artificially lighted) was not deemed to be of so much account or value as it became in those later styles of architecture.

For the lighting of churches I have in some cases suggested pendant electroliers in which are placed lamps in

front of reflectors, so that the light is in all cases reflected towards the east or altar end of the church, whilst the lamps themselves are concealed from the congregation. The lights would be ten or twelve feet above the floor. If it is desired to illuminate the vaulting or roof, which I personally think an utter mistake, subsidiary lights could be arranged above the reflectors concealed by the cresting. Such an arrangement lends itself to architectural treatment, and to decoration by colour and gilding. As an example of the lighting of a modern Gothic church I will take the Lady chapel of the new cathedral in Liverpool. Here it had been suggested that the nearest approach to the equal diffusion of light would be by a large number of single light pendants equally disposed over the entire area. From the purely practical point of view this system would no doubt have been perfect, but, as there would have been no shadows, the architecture of the building would have lost nearly the whole of its artistic interest. The electroliers which I eventually made are six in number, each having twelve 16 c.p. lamps, eight pendant from the cove in the base, and four in the canopy or tabernacle work in the centre of the design. They are tall in proportion to their width (i.e. spire or fountain like in form), to echo the feeling of verticality of the building itself. The basis of the design being square on plan, the tendency to restlessness, due to the rather ornate character of the minor features, is arrested. These electroliers, which are about nine feet in height, are of wrought iron, nearly entirely gilded with gold leaf, quiet in tone, a few of the parts painted with cobalt blue.

To sum up the problems connected with the lighting of churches, we may say first with regard to disposition that a too much diffused light destroys the effect of mystery, so much to be desired in a church, owing to the absence of shadows; and second, with regard to design, that in a basilican or Classical form, having mainly horizontal features, the suspended candelabra of the horizontal ring form, as at Hildesheim, Aix-la-Chapelle, and the ancient method of Santa Sophia, is the most appropriate and harmonious. In a building of the more mediæval type, i.e. the vertical Gothic type, the spire or fountain like form should be chosen, as at Liverpool Cathedral. If you imagine these types transposed you will at once feel the sense of incongruity.

For internal domestic lighting by electricity the problem is no doubt difficult, and it may perhaps be said that it has not been solved with complete satisfaction. One reason is that if the lamps are sufficiently high to prevent an unpleasant glare in the eyes, the illuminating power is seriously diminished. It may be shown scientifically that the illuminating power of lights varies inversely as the square of the distance. For example, a certain light, say two feet away from an object, will illuminate that object to a certain degree. If the light is removed to say six feet away from the object—i.e., three times as far—the degree of illumination will be diminished, not to one-third, but to one-ninth, and so on. Or to put it another way, an object is illuminated to a certain degree by one electric lamp at a distance of two feet. If it is desired to illuminate it to an equal degree by lamps three times as far away, then nine lamps must be used. From this it will be seen how extremely uneconomical it is to use remote lights. It has been sought to prevent the glare by concealing the lamps, and depending on reflection from a white ceiling or other surface for illumination. This method is also wasteful, and a room wholly lighted in this way has a somewhat cheerless appearance, perhaps not unlike that of moonlight. On the whole, it appears to me that lights reasonably near the ground, and covered with a translucent shade of restful tone are the most satisfactory.

[Mr. Reynolds here showed a number of slides illustrating modern fittings for domestic lighting made by himself—one of which appears in our centre plate. These were followed by slides of old and new lamp standards and brackets. Next came some symbolic ornaments for churches, two of which (a silver censer, incense boat and spoon, and the primal cross of the Archbishop of York, both designed and made by Mr. Bainbridge Reynolds) are included in our centre plate. The next group comprised gates, railings and staircases, that is to say examples of the principal uses of wrought-iron applied to decorative design.]

The railing at the Horse Guards is a simple work of the Georgian period which is massive and magnificent. The building is by the architect Kent. The gates are a specimen of double scroll panel gate with piers oblong on plan. It is massive to match the railing. The base, the dado, and the cap mouldings have very bold projections; they are of cast iron, the whole of the rest of the work being wrought. The beautiful "masculine" flavour of the design is admirably

suit to the charming severity of the detail of Kent's building, and in entire harmony and sympathy with it. In spite of their simplicity and breadth, they are somewhat "Regal" in aspect, but with "British" Regality, unlike the Regality of work at Versailles or Nancy which was intended to convey the impression of the Palace of an Emperor rather than that of a King.

The railing at Boodle's Club, St. James's Street, S.W., appears to me one of the most beautiful examples of Adam railing in London. Its severe simplicity is one of its most striking features.

I have always admired the gates of the Inner Temple. They prove that which I always contend, namely, that gates and railing, when placed in large spaces, or against vast trees in a park, demand that the iron, both of the framework and the scrollwork, should be generous in size. In this respect much of the modern work fails, I think. It was erected early in the reign of George II.

The seventeenth-century railing in Lincoln's Inn Fields, on the west side, is absolutely mediæval in character, and the only example of seventeenth century railing in London, put up before Tijou and Huntingdon Shaw, and men of that period. It is a perfectly satisfactory screen of a protective nature, which is easily seen through, and does not obstruct the view of the beautiful house behind it by Inigo Jones. All ironwork previous to Inigo Jones was mediæval in character, and the example proves that even, contemporary with Inigo Jones, architecture was still mediæval in style. It is excellent and very simple in design, and stands between the two well-known immense piers of red brick, surmounted by stone vases. The facade of Inigo Jones's house, seen behind the railing, is of exquisite proportion and quite simple in detail.

One of the most beautiful staircases in London is at Lincoln's Inn Fields. The panel at the head of the stairs has many of the features of the screen at Hampton Court.

Perhaps the finest example of an eighteenth century English staircase railing is at 5 Bloomsbury Square. This has been attributed, with insufficient evidence I think, to Isaac Ware, the architect of Chesterfield House in Mayfair.

The gates and railings at Carshalton Park, Surrey, are well-known to students of metalwork, owing to their unique character in design. They are very distinguished and uncommon looking, and have a certain air of weirdness, if not of sadness, which is rather fascinating. The strong note of horizontality marked by the dado and cornice, combined with a similar minor note in the three gate heads (of scrollwork), in conjunction with the strongly marked arresting point at the square piers at either end, give to the whole ensemble an air of great reposefulness and dignity. They were designed by Giacomo Leoni, born 1686 and died in 1746. They were erected at Carshalton about the year 1723. During recent years they were for sale.

Jean Tijou, the celebrated designer of ironwork in the days of Wren, designed the screens which lead into the north and south aisles of the choir of St. Paul's. Tijou's book of designs for ironwork proves that he was not a designer strictly from the smith's point of view. The designs are, so to say, mere patterns for ironwork. The smith, in executing the work from his design, probably made a rough, but practical, cartoon from it with a "coal," as they termed charcoal in those days. Tijou was, however, an expert designer in another respect, in that in designing his patterns of the scrolls and arabesques, he was careful to design the patterns left by the voids, as well as those of scrolls themselves, so as to make a pleasing combination. This point is one not very often observed in the designs of subsequent periods, and still less perhaps in modern ones. Tijou used forms such as squares, and other shapes more appropriate to materials such as wood or stone. These forms the smiths of previous times would not have dreamed of using, as they do not lend themselves readily to the natural manipulation with hammer and anvil of wrought iron. It is not impossible to make such forms in this material, and Tijou no doubt was content to use these forms, inappropriate to the material, with a view to perfection of design, in order to prevent a feeling of restlessness in the scrollwork, through contrast with these adjacent geometrical forms.

Before leaving the subject of old gates, railings, and screens, I would observe that a study of them shows that the English designers, from the reign of James II. to the end of the Georgian period, were evidently influenced by French feeling. I thought it well to give a fairly large number of examples of the charming old pieces of ironwork still existing in London, so that those who care to do so may go to see them themselves. They ought to be carefully photo-

graphed, drawn, and measured, as there is only too much reason, alas! to suppose that they will now rapidly disappear owing to "so called" improvements, and to rebuilding. A whole series of exquisite balconies (mostly of the geometric type), and many splendid examples of "Adam" type staircase and railings, have already gone from each side of Great George Street, Westminster, during the last two or three years, and one fears that they will not be replaced by anything so beautiful, so characteristic, or so appropriate.

In some respects the very finest metal work which has ever been produced in the history of the world is that of a particular epoch in the Renaissance period in Spain. The metal work, both in silver and gold, and in forged iron, was of the most superb description, both in design and execution, but it is in the latter metal that the Spaniards chiefly excelled, especially in their grilles, which they call Rejas. It is still said, by the bye, in Spain that a Spanish smith can, even now, make a good Reja, but this is, I fear, very doubtful. The finest of these are naturally to be found in the beautiful cathedrals of their charming country.

Most English people have at one time or other visited Westminster Abbey. I mention the Abbey because the arrangement of the choir there in reference to the other parts of the building is the same as it invariably is in a Spanish cathedral, that is to say, that the choir is in the nave, westward of the lantern, or place where the nave, sanctuary and transepts meet. In a Spanish cathedral one of these immensely tall Rejas or screens would be placed where the altar rails are at Westminster, so as to protect quite effectually the precious ornaments and vessels in the sanctuary. Another Reja would be placed at the eastern end of the choir, to guard the valuable books and painted illuminated missals in the choir. In some cases others of similar height are placed north and south of the lantern, to cut off the two transepts, where the lay worshippers were assembled, thus giving a free and uninterrupted passage from the choir to the sanctuary for the clergy.

In other cases, where the two grilles or Rejas cutting off the two transepts are omitted, low railings, about four feet in height, extend from the gates in the Reja at the eastern end of the choir to corresponding gates in the Reja guarding the sanctuary. These low railings are placed so as to be of the same width as the gangway or central aisle of the choir, and serve the purpose of preventing any pressure from crowding during the progress of the clergy from the choir to the sanctuary (especially during the great festivals of the Church).

The western end of the choir, which is in the nave, is separated from the nave, invariably, by a solid stone screen, with a door in the centre of it, precisely similar in type to the one at Westminster Abbey, and in the same position. A Reja (or metal grille) is never placed there in a Spanish church or cathedral.

The particular phase of the Renaissance in Spain on which I remarked just now is called by the Spaniards the Plateresque period (of which the Reja of St. Pablo, Palencia, is a fine example), and is that which gives a particular flavour of its own to the architecture (and especially to the Rejas) of that period. This period lasted roughly from the year 1500 to 1560, and most of these metal grilles were executed more or less during that period. The magnificent specimen of one to the high altar in Seville Cathedral, by Friar Francisco di Salamanca, was executed between the years 1518 and 1533.

There are, of course, all over Spain, wrought iron grilles of the previous Gothic type, such as that in the cloisters of Barcelona. These were usually decorated in colours and with parts gilded. The colours were usually Venetian red, sage green, and sometimes cobalt blue, in conjunction of course with subsidiary colours such as ivory white.

These Gothic Rejas are usually tinged with a strong flavour of Orientalism. One in Burgos Cathedral is almost wholly Oriental in conception and detail; but this characteristic is not to be wondered at, when we remember that the Moors were inhabiting a part of Spain for nearly 800 years. The Renaissance (or Plateresque) examples were not entirely uninfluenced by this phase in the history of the country, though this flavour is not nearly so noticeable as in the earlier Gothic examples. The fine example of a Spanish Renaissance Reja in the new ironwork gallery at the Victoria and Albert Museum (where it is much more effectually displayed than it formerly was in the old gallery) exhibits a strong note of Orientalism in the delicate and lace-like trefoils between the caps of the spindles under the cornice.

The lecture closed with a fine series of slides of Spanish ecclesiastical metal work.

THE ARCHITECTURAL ASSOCIATION.

AN ordinary general meeting was held at 18 Tufton Street, Westminster, on Monday last, of the Architectural Association, combined with a meeting of the Camera, Sketch, and Debate Club. The chair was taken by Mr. Gerald C. Horsley, vice-president. The election of the following candidates for membership was unanimously carried:—Messrs. C. O. Beardmore (Oxford), A. A. Messer (Woking), and F. M. Tozer (Maidenhead).

The house list for session 1911-12 was announced as follows:—

President:—Mr. Gerald C. Horsley.

Vice-Presidents:—Mr. W. Curtis Green, Mr. W. J. Tapper.

Ordinary Members of Council:—Mr. A. T. Bolton, Mr. C. C. Brewer, Mr. F. C. Eden, Mr. G. Leonard Elkington, Mr. Horace Field, Mr. Stanley Hamp, Mr. A. R. Jemmett, Mr. A. Foxley, Mr. P. W. Lovell, Mr. C. Lucas, Mr. E. B. Maufe, Mr. Percy May, Mr. C. Wontner Smith, Sir A. Brumwell Thomas, Mr. G. C. Wornum. (Ten to be elected.)

Hon. Treasurer:—Mr. Arthur Keen.

Hon. Editor "A.A. Journal":—Mr. P. Cart de Lafontaine.

Hon. Librarian:—Mr. W. H. Ward.

Hon. Secretary:—Mr. Herbert A. Hall.

Nominations for officers or ordinary members of the Council may be made by members at the next ordinary general meeting on April 3, in accordance with By-law 33.

Mr. A. M. BRICE then read the following paper, entitled—

The Legal Authority of the Architect as an Agent.

It is obvious that, in dealing with a subject so large as the title of this paper indicates, I must confine myself rather to principles than details, to illustrations rather than to arguments; and it seems to me that it may be more suggestive if I dwell upon the cases where the authority of the architect is implied, rather than upon those in which it is expressed, for the careful architect will find expressed in the building contract from which he derives his authority as agent precise directions as to the nature of that authority, while it may be only by the aid of a long experience or a legal knowledge that he will be able to decide for himself the range and limitation of his implied authority.

Speaking generally, an architect may be employed merely as an adviser, or as a designer or draughtsman, or as an agent for the building owner. Usually, of course, he is called upon to discharge all these functions together.

As adviser, he holds himself out as possessing the necessary knowledge and skill, and as willing to exercise all reasonable care in giving such advice. No authority is delegated to him by the building owner, because there is none to exercise in this simple relation.

As designer or draughtsman, he contracts to supply drawings and a specification executed with reasonable care and skill, and that these shall be capable of being carried out. He warrants no special degree of skill, and the test as to whether he displays enough is whether the skill is so deficient or the case so defective that a bad result becomes inevitable. Again, no authority is delegated to him by the building owner, because there is none to exercise in this relation.

But when he adds to these the functions of supervisor of the works upon which he has advised, or which he has planned, or, less often, when he undertakes to supervise the erection of what others have planned, he becomes the agent of the building owner, invested with certain authority over others, and expressly liable to his employer and to third parties for his use of it. He is invested with authority to deal with many questions regarding both site and building, the preparation of the plans, the working drawings and specification, the estimate of the cost of their execution, the obtaining of tenders, the preparation of the building contract, the performance of the duties imposed by the contract and the agreed variations from it, and the general supervision and control of the performance of the contract by the principal contractor and his sub-contractors.

An architect may be appointed and invested with the full authority of the terms of his appointment by mere word of mouth, or his appointment may be inferred from the conduct of his apparent principal, or from the ordinary course of dealing, or, as is obvious, it may be shown by a written contract. In practice appointment by written contract is the usual manner, but in law it is only necessary in two cases to make such appointment in writing. In the first case, if

the work is not to be performed within the year, or is incapable of being completely performed within the year, then, in order to satisfy the Statute of Frauds, the appointment must be in writing. In the second case, seeing that a corporation aggregate can in general only act by deed, its agent must be appointed by deed. There are exceptions to this second rule, and for certain trifling agencies a corporation can act without deed, while a trading company, though it be a corporation aggregate, can generally act without a deed.

The authority of an architect flows from the terms of his appointment as the agent of his employer, and in practice is generally limited (so far, at least, as the relations between the building owner and the builder are concerned) by the terms of the building contract. On the other hand, it frequently happens that where the work is on a small scale, or of an intermittent character, the building owner does not enter into a formal agreement expressing the conditions upon which he delegates his own authority to the architect, and in such cases the limits of that authority must be sought elsewhere than in a formal contract. It follows that where no formal agreement exists defining the power of the architect that the general principles of the law of agency, limited by the application of the ordinary practice of the profession, will control the authority of the architect.

The general principles of the law of agency as affecting the authority of the architect are equally applicable whether the appointment is made in writing or otherwise, but in both cases they may be excluded by an express, or what in point of law may be held to amount to an express, provision to the contrary. Failing such express provision, it is clear that the architect's authority (as between his employer and third parties) is to be measured by the extent of his usual employment—a standard which, though it might be readily ascertained in practice, is not unlikely to invite litigation.

Where the architect is the agent of his employer, authorised to act in the name of that employer, he may be the general agent of his employer, or his authority may be restricted within narrower limits. If he be the general agent to the extent of the usual employment of an architect, then he possesses the full apparent authority due to his position, and his employer is bound by all acts of the architect which come within that authority. And whether the terms of the agreement are merely general, or are in part or wholly inconclusive as to the nature of the authority imposed, the architect would be justified in adopting the ordinary and reasonable practice of his profession, and in doing so would be held to be complying with the requirements of the law.

On the other hand, where the authority of the architect is defined by express terms, which may be oral, but are usually in writing, such limitation must be strictly observed. Any infringement of such authority by the architect would release the employer from liability, and render the architect himself liable in damages to injured parties. But the infringement must be material, for the law holds that in the construction of such authority there is present an implied permission to the agent to use the means that are necessary to carry into effect the expressed purpose of the employer.

Thus, in *Evans on "Principal and Agent"* (second edition, p. 178) it is pointed out that when authority is conferred upon an agent by a formal instrument there are two rules of construction to be carefully observed:—

(1) The meaning of general words in the instrument will be restricted by the context and construed accordingly.

(2) The authority will be construed strictly so as to exclude the exercise of any power which is not warranted either by actual terms used, or as a necessary means of exercising the authority with effect.

A good illustration of this doctrine is afforded by the leading case of *Sharpe v. San Paulo Railway* (1873, L. R. 8 Ch. 597), where it was held, *inter alia*, that the contractors could not, on mere verbal promises by the company's engineer (which were unauthorised), maintain against the company a claim to be paid sums beyond the sums specified in the contract, even though the amount of work to be executed might have been underestimated by the company's engineer; and that as the contract had provided that the certificate of the engineer had been made a condition precedent to payment, such certificate must be held conclusive between the parties in the absence of fraud.

The authority of the architect, whether general or limited, usually extends to his doing all acts required in the process of obtaining tenders and making drawings for and supervising the erection of or addition to the building, for the purpose of which he has been employed. Thus, in *Kimberley v. Dick* (1871, L. R. 13 Eq. 1), Lord Romilly, M.R., said

that he must treat the architect as the agent of his employer, "generally, for all purposes connected with this building, and that without any limitation as to price or anything else." Again, Lord Coleridge pointed out in *Laidlaw v. Hastings Pier Company* (Jenkins and Raymond, fourth edition, p. 238) that the engineer, from the beginning to the end of the deed, "out of the four corners of which his position is to be collected," was agent to his employers, but as their agent "clothed with peculiar functions exercisable only as provided for by the deed." Where, consequently, an architect allowed the projecting timbers of the adjoining owner to be built into the wall of his employer, it was held that he had exceeded the nature of his employment, and that the act was not within his authority (*Betts v. Pickfords* (1906), 75 L. J. Ch. 483).

Again, if an architect be employed merely to make drawings, he is acting as an independent contractor, a skilled draughtsman, or professional man, and, as no question of agency arises, no question of authority can follow. But if he is making drawings for delivery to the builder, a question of authority can enter as to the warranty that they are correct or that the builder can work to them. But no such warranty can be implied. An illustration of this is to be found in *Thorh v. London Corporation* (1876, 1 App. Cas. 120), where the House of Lords held that where plans and a specification for the execution of a certain work are prepared for the use of those who are asked to tender for its execution, the person asking for the tenders does not enter into any implied warranty that the work can be successfully executed according to such plans and specification. No such warranty would appear in any properly drafted building contract, and if the architect should be so foolish as to warrant such accuracy or possibility to the builder it is he and not the building owner who would be liable to a builder, for it is the architect who has exceeded his express authority.

Where the duty and authority of the architect are set out in a written contract there should, as a rule, be little difficulty in ascertaining the extent and limitation of both duty and authority. But all building contracts (in which the provisions for the architect's powers are usually embedded) are not perfect specimens of draughtsmanship, and it is when they become ambiguous, inconclusive, or defective that questions for consideration and settlement arise. It is in such cases that it becomes of the highest importance to know what the implied as opposed to the express authority of the architect may be, and to apply to the omissions or the ambiguities the general principles of the law of agency as modified by the practice of the profession, and as limited by the context of the contract in question.

For example, when the architect has power to order extras he has not, in consequence, the implied authority to order as extras the execution of omissions on his drawings (*Sharpe v. San Paulo Railway*, supra). Nor when his drawings are not practicable has he any implied authority to order as extras work to be done that will render them practicable. Thus, in *Tharsis Sulphur and Copper Company v. McElroy & Sons and others* (1878, 3 App. Cas., part 2, p. 1040), where there was a contract for construction for a lump sum, and a clause that no extras should be done without a written order from the employers' engineer, it was held that the certificates of the engineer, though they referred to work done of a more expensive character than that specified for, were not to be regarded as written orders, and that the claim of the contractors was excluded by the contract.

No implied authority rests with the architect either to obtain tenders or to enter into contracts with a builder. Neither is he authorised to negotiate for advances or undertake any preliminary work of this character without an express authority from the owner. If, on the other hand, he has such express authority, he can bind the owner for any reasonable expenses to which he may have been put in the course of conducting such preliminary work.

Though an architect has authority to make drawings for the purpose of the works, he has no implied authority to make such changes in those drawings as would destroy the original scheme. But he has an implied authority to supply drawings of details not shown in the original plans.

So, too, it has been held that an architect has, when authorised to obtain tenders, an implied authority to engage the services of a quantity surveyor to supply quantities, although it is doubtful whether such architect has any implied authority to take out those quantities himself. But the quantities must comply with the limitations of the architect's authority, and if he be authorised only to

obtain tenders not exceeding a certain amount, then he can only have the implied authority to obtain quantities within that amount. But where, as in *Evans v. Carte* (*Times*, May 5, 1881), the quantity surveyor brought an action against the building owner for fees for reducing the quantities upon drawings of the architect, which proved too expensive when the tenders came in, and the building owner authorised the architect to reduce the quantities in order to reduce the cost of the building, it was held that the quantity surveyors were entitled to sue the building owner for the cost of such reduction of quantities. And even if the building owner has not originally given the architect authority to reduce the estimates and quantities, but becomes aware of the fact and approves expressly or impliedly, the architect's authority would be confirmed, for, as Lord Coleridge said in the case just cited, "ratification or tacit assent would be equivalent to precedent authority."

In the absence of a limit of price in the contract, the architect has an implied authority to order works for which the builder may recover the price, even though, as a fact, the employer has privately given such limit of price to the architect. As long as the authority can be properly implied, the builder can maintain his claim against the building owner, and it is for the latter to recover damages from the architect for exceeding his authority.

The architect has not an implied authority to dismiss a builder, and consequently any authority to so dismiss must be expressed, and is usually put into the contract. If put into the contract, it must be specific and not general in its application, for it has been held that where there is a clause enabling the architect, should he deem proper, with the written authority of the building owner, to dismiss the builder, the written authority of the building owner must not be in general terms, but must indicate a particular person.

An architect has no implied authority to bind his employer for the expense consequent upon sub-contractors of the contractor carrying out the orders of the architect, whether by way of original work or of deviations. Nor has he an implied authority to incur on behalf of his employer any liability to specialists unless such specialists can be shown by the terms of the contract to be employed by the building owner. If such specialists are, in fact, the sub-contractors of the principal contractor, then no certificate of the architect can entitle them to claim payment from the building owner; nor can the contractor claim damages from the building owner in respect of any delay caused by such specialists (*Leslie v. Metropolitan Asylums Board* (1901), 68 J. P. 86).

The architect has no implied authority to vary the building contract. His authority, on the contrary, directs him to see that its express terms are carried out. But it is always possible for the parties to the contract to vary it by consent, and to empower the architect to authorise such variations. Where he is empowered to give directions, such directions must be within the expressed limits of the contract (*Sharpe v. San Paulo Railway*, supra).

Similarly, an architect has not the power, unless expressly given, to represent that the building owner has varied certain conditions—often such conditions as deal with waiver. The contract, when reduced to writing, remains the final agreement of the contracting parties, and no unauthorised representation of the architect can reduce the liability of the builder or impose one on the building owner. On the other hand, should the architect make representations, before the builder has entered into the contract, as to the character of the work he will require, he would be authorised to act subsequently upon such representations, and they would not be held to be varying the terms of the contract unless those terms were inconsistent with the representations. But the making of such representations is loose and ill-advised and leans to litigation.

An architect has no implied authority to give verbal orders when the contract provides for orders in writing, nor can he dispense with estimates in writing when such are required. But this does not prevent the architect from giving verbal orders or receiving verbal estimates conditionally upon their being reduced into writing before they are to become binding.

As to extras, the architect has no implied authority to vary the conditions which the terms of the contract impose in respect of these items. Nor has he authority to regard as extras such items as are absolutely necessary to complete the contract. The architect will often certify as extras certain works which are not shown on his drawings or mentioned in the specification, or, at least, in the quantities. He has no authority to do so if such details, though not

included in the contract by name, are necessarily part of the work. It is the duty of the builder to see whether everything is mentioned in the specification necessary to the completion of a given work, and to allow for such things as may not be described in the specification or shown on the drawings. *Thorn v. London Corporation (supra)* clearly laid down that the onus rests on the builder if he tenders on specifications and drawings which are inadequate or not practicable. He must not rely on such drawings or specifications; as Lord Chelmsford said, in the case just cited, "It is an usage of blind confidence of the most unreasonable description." This being so, it is not within the limits of the architect's authority to certify for such extra work which such "blind confidence" might consider extras to the contract. Whether certain work is an extra or is included in the contract may be a question of construction, and demand legal consideration, but it is often within the implied authority of the architect to decide what are extras. Such a power would arise when the contract allows him to decide the construction of the contract; it would also be present if he were empowered to value extras, and were not required to demand or were permitted to waive written orders for extras. This would apply to extras within the contract. But if the extras were so outside the contract that they might be regarded as severed from it, and from any restriction contained in it, it would naturally follow that all the conditions affecting written orders, valuations, and certificates by the architect would thereupon cease to apply, and that the claim by the builder in respect of such extras as these would be found on the basis of a *quantum meruit*, and not upon the contract as controlled by the authority of the architect, whether express or implied.

To put it summarily, an architect has no implied authority to order or contract for extras, and if he abuses his powers in this respect under the contract the builder, who is privy to the contract and yet acts on these unauthorised orders, cannot recover from the building owner (see *Cooper v. Langdon* (1841), 9 M. and W. 60).

Similarly, there is no implied authority on the part of the architect to bind the building owner by his progress certificates, unless such certificates conform to the terms of the contract. But if the architect is authorised by the terms of the contract to make a valuation which shall be binding upon both parties to the contract, then he would have an implied authority to issue certificates not so conforming.

The authority of the architect when granting a certificate in his capacity as the agent of the building owner is comprised within the range of such certificates as may be merely ministerial—that is, which do not call upon him for a final opinion dependent on the exercise of judgment and professional skill. In certifying that certain materials have been supplied, that a given amount of work has been done, that something agreed to be delivered has been delivered, that something which the architect had power under the contract to order has been ordered by him and supplied, that the times agreed upon for performance have been complied with—in short, while issuing non-conclusive, interim or "progress" certificates—the architect is ordinarily discharging the ministerial duty which he is authorised as agent for the building owner (see *Tindal, C.J., in Morgan v. Birnie* (1833), 9 Bing. 672), and so long as he exercises all proper care, displays all reasonable skill, and acts honestly and *bonâ fide*, and within the scope of the authority conferred on him by the contract or otherwise, he discharges his liability to the building owner. Acting in such a manner, he is under no liability to the builder, between whom and him there is no privity of contract. But as soon as his authority is extended to enable him to determine, or assess finally and conclusively, some question of fact between the parties, he ceases to be the agent of the building owner *ad hoc*, and becomes a quasi-arbitrator between the two parties. His authority extends to, nay, it compels an impartial discharge of this supplementary power, for, as *Collins, M.R.,* observed in *Chambers v. Goldthorpe* (1901, 1 Q. B. 641), he is "clothed with the duty of exercising an impartial judgment." All that is needed to make such judgment binding are the facts that he is not disqualified by some circumstance to act judicially, that he is the person designated by the contract to give the certificate (when the certificate of more than one architect is required a certificate by one will not suffice, see *Lamprell v. Billericay Union* (1849), 3 Ex. 282, 18 L. T., Ex. 282), that he has received authority to certify regarding the subject matter of his certificate, that the power is still in existence, and that the certificate is shown by the contract to be intended to be binding on both parties (*Robins v. Goddard* (1905), 1 K. B. D. 294).

So, too, a contract will frequently leave many matters to the decision of the architect for the exercise of his professional judgment and skill, not as an arbitrator, who hears and weighs evidence, but as a person on whose special knowledge and capacity both parties rely. In such a case, the authority exercised in individual instances is an implied authority, which depends for its validity upon the fact that it is applied to cases which come within the clause of the contract. For example, where in *Roberts v. Bury Commissioners* (1871, L. R., 5 C. P. 310) the architect had decided that the builder had not exercised due diligence, and the building owner, in consequence, dismissed the builder and determined the contract under the conditions, it was held that the building owner was not entitled to do so, as the contract had not made the architect conclusive judge as to due diligence. And where the architect's certificate or decision is declared to be conclusive concerning anything in connection with the contract, there is yet no implied authority by which the architect can bind the builder as to the compensation payable by the building owner in respect of his breach of the contract.

Such are a few of the many instances which might be cited as showing where the architect has an implied authority and where he has not. Only an acquaintance with the principles of agency, as limited by the practice of the profession, and of the case law of the subject, will enable a clear view to be taken of the bearings of each question as it arises, but the architect can generally pursue his path in peace and safety if he study his contract with care, and adhere to it with scrupulous fidelity. If, however, he does not, he will be faced with the unpleasant consequences which follow upon his exceeding his authority—consequences involving not only his employer, but also himself in serious loss.

(To be concluded.)

NOTTINGHAM ARCHITECTURAL SOCIETY.

THE fifth meeting of the Designing Club connected with this Society was held on March 14, the president (Mr. R. Evans, jun.) in the chair. There was a very good attendance. The subject set was a "Design for an Urban District Council Office," and the visitor was Mr. F. W. Gregory. Although only four sets had been submitted, they all showed that a careful consideration had been given to the subject, and Mr. Gregory remarked that he noticed a great improvement in the general style of drawing since his last visit. After pointing out the various good points and calling attention to the defects, a discussion followed in which several present took part. On the proposition of Mr. Sutton, vice-president, a hearty vote of thanks was accorded Mr. Gregory for his kindly criticisms and the four students who had been at the trouble to prepare drawings to be "shot at." The president announced that a Smoking Concert had been arranged for March 28, when the whole of the designs sent in during the session would be exhibited as well as the drawings submitted in the measured drawings competition, and the prizes would be presented.

ILLUSTRATIONS.

METAL WORK.

THE screen in the parish church of St. Neots (of which a detail photograph is given) is of gilt wrought-iron. The screen was made by Mr. W. Bainbridge Reynolds from the designs of Mr. F. A. Walters, F.S.A. The censer, incense boat and spoon, grouped together in another photograph, are of silver, and were made and designed by Mr. Bainbridge Reynolds. Two years ago Mr. Bainbridge Reynolds was invited to design and make the Primatial Cross of the Archbishop of York. A photograph of it appears in the centre of our plate. The lantern illustrated was designed for the lighting of a long gallery of Elizabethan type in a country house. This fitting is one of several which were decorated in colours and partly gilded in the customary manner for work of the Elizabethan period. The interior of Lubeck Cathedral shows metal work referred to by Mr. Reynolds in his lecture. The repoussé copper retable from the Escorial and the silver monstrance from Cadiz are described in Mr. Reynolds's lecture.

OXFORD COLLEGE SERIES.—CHRIST CHURCH.

WE this week complete our series of views of Christ Church with views of the Great Quad and of the interior of the Hall.

THE ILLUMINATION OF INTERIORS.

By Professor J. T. MORRIS, M.I.E.E.

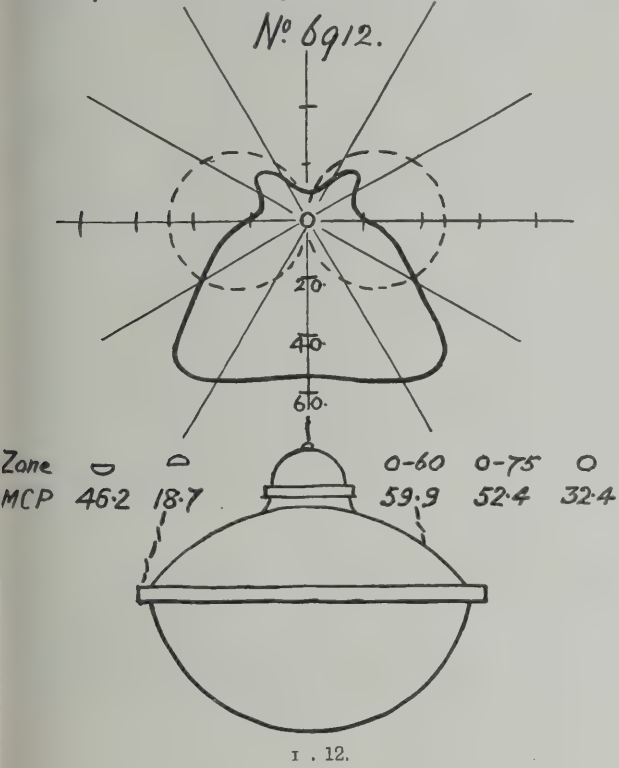
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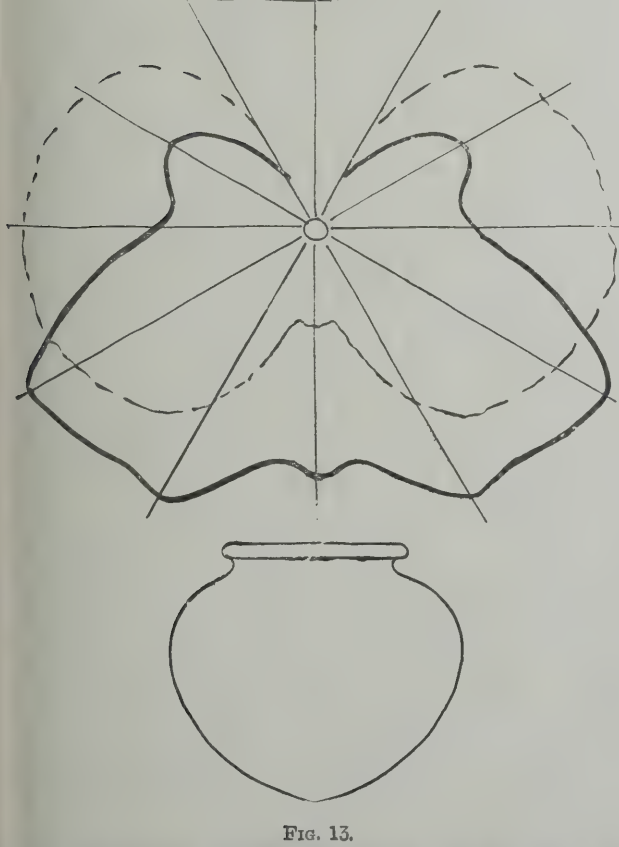
POSITION OF SOURCES OF LIGHT AND SUITABLE SHADES.

[T is an interesting problem, whether, for interior illumination, it is preferable to have a good local illumination where it is required for reading and writing, and to

Holophane Reflector Bowl.



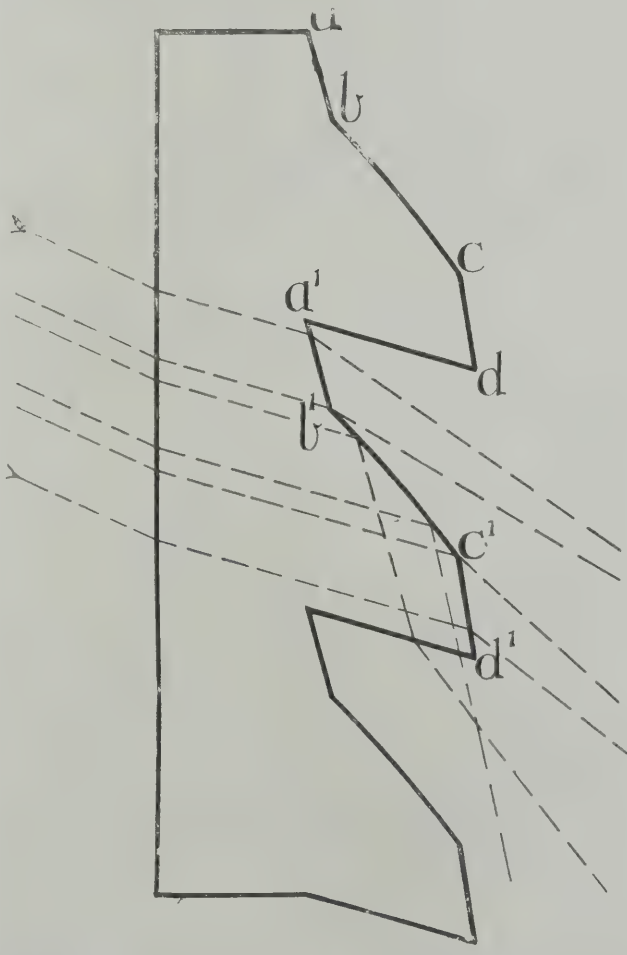
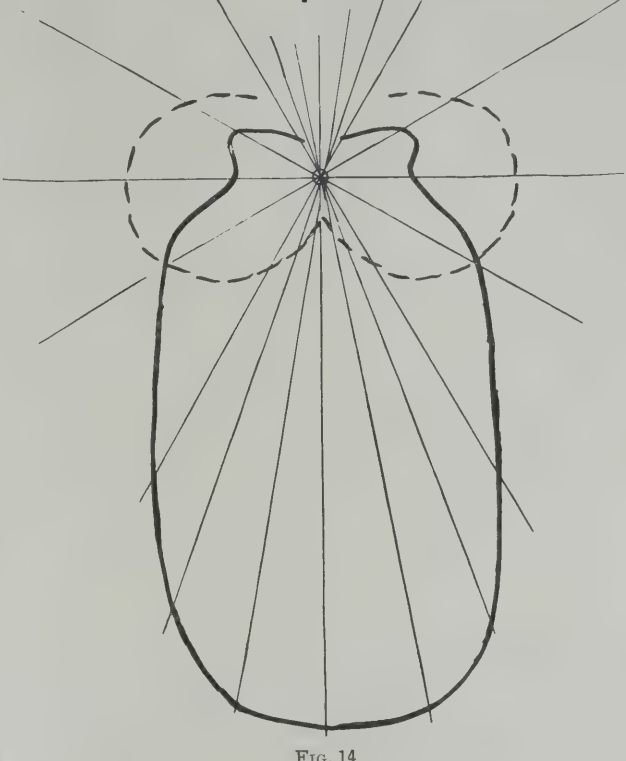
Holophane.



allow the general illumination more or less to look after itself, or whether a sufficient general illumination should

be provided for all purposes. At one time the author held the former view, but more recently he has inclined towards the idea that a combination of the two is the

Holophane



most desirable. For street lighting he has for a long time, in opposition to general practice, insisted that shades should be provided so that no horizontal rays might strike

the eye when looking down the street. It would seem, however, that people prefer to see the effect of a number of bright points rather than have a good illumination only on the ground. As an example one might take the case of Whitehall; the high-pressure gas lighting in this street is magnificent from the point of view of brilliancy, but certainly defective according to the view expressed above.

For an efficient and scientific shade it is necessary that while the light shall be deflected in the required direction, there shall be as little loss as possible due to absorption.

One example of such a series of shades or globes is that manufactured by the Holophane Company. Figs. 12 to 14 illustrate the remarkable extent to which the

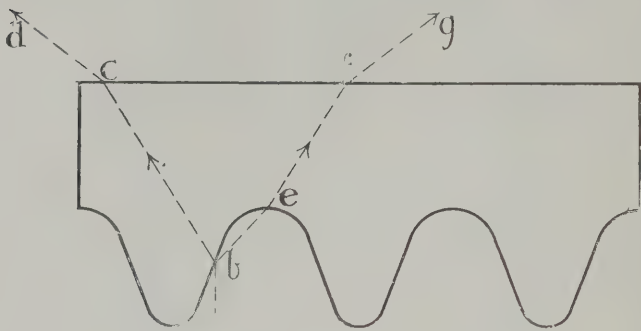


FIG. 16.

polar curves of illumination intensity can be varied by these shades to give the results required.

The principle of their action is illustrated in figs. 15 and 16. Fig. 15 shows the details of a globe in vertical section required to deflect the light downwards. It will be seen that the surface of the globe is serrated in the

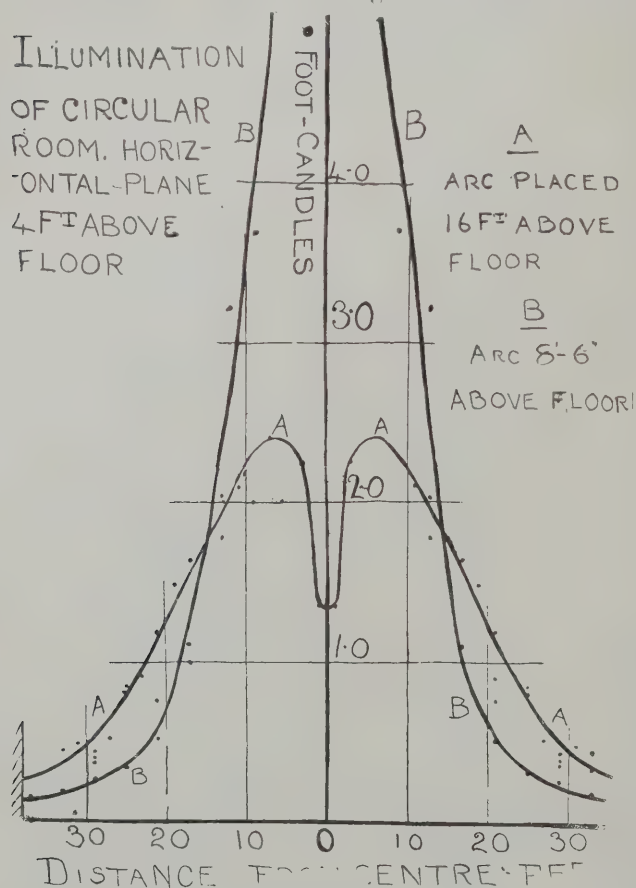


FIG. 17.

form of prisms, which, by refraction and total internal reflection, direct the rays as required. These surfaces are not made haphazard, but are designed on scientific principles. (It should be noted that as the illumination is required in a downward direction the exterior surface through which the light has to pass will not allow dust

to lodge.) Fig. 16 shows the action of a globe intended to distribute the light in all directions in a horizontal plane. In this case the section is horizontal. Apparently Mr. TROTTER was one of the earliest workers in this field who appreciated the great advantage to be obtained from a suitably designed globe. M. BLONDEL has also devoted much time to this subject, and such shades as those which have been described have been developed largely on the lines indicated by these two experimenters.

There is a common idea that when a room is lighted by a central source of light which is placed high up in the room, if the lamp be lowered the general illumination and also its usefulness will be improved. This is not so. It is true that there will be a space under the lamp which will have a brighter illumination, but nearer the walls the illumination on a horizontal surface will be diminished and, owing to the much greater inequalities brought about by the lowering of the light, will be decidedly less useful than before. As an example of this, let us take the case illustrated by the curves shown in fig. 17. The room was circular and of thirty-eight feet radius, and was lighted by a central arc lamp. The curve A-A shows the distribution of light on a horizontal plane 4 feet above the floor with the lamp in its highest position, while the curve B-B shows the change brought about by lowering the lamp 7 feet 6 inches, the original height being about 16 feet. It will be seen that while the illumination directly beneath the lamp was greatly increased, even to an undesirable extent, yet at places some distance away the light was actually diminished.

In conclusion, the subject of illumination has many aspects, though here it has only been possible to refer to a few of them. To the architect, however, suitable illumination is of great importance, as it may serve either to mar or greatly to enhance the lines of his interiors. He has many things to consider in the design of a building but surely the least of these is not the proper lighting of the interior either by day- or artificial light.

ROYAL INSTITUTE OF BRITISH ARCHITECTS

A MEETING of the Royal Institute was held on March 13, when a paper was read by Mr. J. A. Gotch, F.S.A., on "The Burlington-Devonshire Collection of Drawings," in the library of the Institute. A report of this interesting paper was given in our last week's issue. We give below a report of the discussion.

Mr. J. D. CRACE said it was a great pleasure for him to propose a vote of thanks to Mr. Gotch for the charming paper they had just heard; he would also like to add his personal thanks for the kind way in which Mr. Gotch had recognised the small part he had played in obtaining the transfer of the Burlington-Devonshire collection of drawings to the Institute. It had always been an incident in his life, said Mr. Crace, upon which he looked back with unmitigated satisfaction, because he felt that the premises of the Royal Institute of British Architects was a place where it could be turned to best account. The paper threw a great deal of light upon the history of British architecture as well as upon the history of the drawings themselves. The date of the Queen's House at Greenwich was beyond question, because it is inscribed on the front of the building. There seemed to be no doubt that John Webb deserves a higher place in the ranks of English architects than he now enjoys. The fact that the King Charles block at Greenwich Palace was attributed to Inigo Jones instead of to Webb was paralleled by the way in which most of the jokes in the first part of the nineteenth century were attributed to Sydney Smith, or the pictures imported into this country used to be given the names of one or other of the great masters. There was a natural tendency to select the best known name as author. Inigo Jones's reputation did not require to be bolstered up by any doubtful building. It was a surprise to him personally, added Mr. Crace, to hear that there were any foundations still existing of that ancient palace near the river which had occupied the site roughly of Queen Anne's block. There used to be a tradition that this palace of Henry VIII. extended eastwards at least as far as the present east gate of the hospital. The Institute were to be congratulated, said Mr. Crace in conclusion, on having a succession of architects who were willing and able

to give the time and care necessary to arrange a collection of drawings which must continue to attract the attention of those who followed the history of Italian architecture in this country.

Mr. LAWRENCE WEAVER said he would like to comment on one or two points in the paper which had struck him. Importance had been attached to the fact of the handwriting of Webb appearing on the drawing of the remarkable ceiling at Wilton. The presence of his lettering hardly proved that it was Webb and not Jones who made the design. If it did so then all present-day architects should be careful not to allow their assistants to put any lettering on a drawing. He would suggest that if search were made among the domestic papers of the period reference would almost certainly be found to Webb's precise work at Greenwich Palace. It seemed hardly fair to argue that the onus of proof of authorship lay on Inigo Jones, for surely some value must be attached to oral tradition. Neither should too much importance be attached to the quality of the work of Jones as shown by the drawings. For instance, anyone looking at contemporary prints would not place much value on his St. Paul's, Covent Garden. Similarly it was difficult to credit that people would have talked so much about Jones's west front to Old St Paul's Cathedral unless there had been something in the design.

Mr. W. RYLAND ADKINS, M.P., thought that certain conclusions arrived at by Mr. Gotch had some support from a study of the general view of history and of national development in the period referred to. At any rate it would strike one as plausible that anyone living in the time that Inigo Jones lived, and flourishing as he flourished, called upon to make designs for things like masques, scenery, and drapery would find greater delight in the use of his pen and pencil in freehand drawing than of the more strictly scientific instruments of tee-square and compasses. The seventeenth century in England was remarkable from one point of view for the breaking up of the old varied genius of the Elizabethan era and for the creation of specialists in all departments. There were grounds for contending that the same thing occurred in the realm of every art. People became more consummate masters in particular arts and sciences, but they lost their versatility. Inigo Jones, it should be remembered, was a man of varied calling. The man who designed the Queen's House at Greenwich did not afterwards design King Charles's block. The former was finished in 1635. From 1632 to 1641 Charles was very hard put to it to find money for his undertakings. When he had the Queen's House built he no doubt felt he had done everything he could, and no further plans would therefore be asked for. Moreover, it was difficult for students to-day to take too much into consideration the fact that at the end of the Commonwealth and in the reign of William and Anne the people paid an extraordinary reverence to everything dating before the Civil War. It became fashionable to adopt the attitude of looking back and worshipping everything done before the catastrophe. In consequence there arose a tendency to attribute everything and anything good to that time. Hence there would be a desire to attribute Webb's work to Inigo Jones.

Mr. J. P. MAINE (Librarian at Chatsworth) said that on behalf of the Duke of Devonshire he would like to support the vote of thanks to Mr. Gotch. He could not help feeling that if the Duke had been present he would (to use a Hibernianism) have still more regretted having been absent. There could be no doubt in anyone's mind who looked carefully at the drawings by Inigo Jones that he was infinitely more at home when drawing freehand than when trammelled with instruments. His sketch-book preserved at Chatsworth gives the idea of great mastery and power. This book was the one used by Inigo Jones on the journey to Italy before 1620, and in it he noted down any pictures or portions of pictures as they struck him in going round the galleries. They are masterly little sketches. When one looks at the original drawings for the masques one finds that the technical method is quite different, and that there is not nearly the same mastery. The figures were first outlined in pencil and finally put in with ink after many corrections and erasures. It seemed to him, said Mr. Maine, as if there were, at least, two hands at work on them. Undoubtedly a great deal of this second hand's work may, in the light of Mr. Gotch's paper, be attributed to Webb. With regard to the drawing for the ceiling of Wilton House was it not possible that an examination of the various inks used in the writing and drawing might furnish some additional evidence as to authorship?

Mr. C. R. PEERS said a very interesting distinction had

been drawn between the work of Inigo Jones and Webb. In considering the history of Inigo Jones it was rather illuminating to remember that as far as we know, and the evidence on the point was very clear, he was only a mere ardent amateur until he reached the age of forty-two. It was almost impossible to regard him as anything else. Previous to his return from Italy his architectural work was connected with the designing of scenery for masques, and those drawings can hardly be called architectural. It happened that he lived at one of the most critical times for English architecture, for the art had broken some seventy or eighty years before with the old vernacular tradition, and in the interval had been seeking for something else to rest on. The influences at first were Italian; then these appear to have left us, and our architecture became largely "made in Germany." What was wanted, and what Inigo Jones supplied, was sound scholarship. It can scarcely be claimed that what he gave the country was a vernacular style; but at any rate he gave order in place of confusion. Anyone who will compare the work going on before 1618 with the Banqueting House will see that the latter is absolutely different from anything in the country of that date. There was here a basis of sound and scholarly architecture which must have been an entirely new inspiration for the time. Webb appears to have been an English architect, strongly influenced by the wonderful scholastic teaching of Inigo Jones, but whose work was not on the same level at all. Longthorpe Hall is extremely different to the scholarly work of Inigo Jones, though a decided advance on the work of fifty or sixty years earlier. If one begins to attack or criticise the reputation of any famous architect it is difficult to know where to stop. It is only necessary in this connection to think of the number of houses attributed to Wren or of the pieces of carving said to be by Gibbons. Some of them may have been done by men competent to follow a lead. The great roof of Hampton Court, for instance, is entirely Italian in feeling, but the names of the carvers are quite English. So in the same way Wren and Inigo Jones taught other men, and founded a school of work of which they themselves did not produce one-third.

Mr. GERALD C. HORSLEY thought the Burlington-Devonshire drawings appeared to teach a great deal, not only from the point of view of history, but also from that of design and draughtsmanship. The power of freehand drawing which Inigo Jones possessed enabled him to indicate the true proportions of the work he was designing in a way which led to the final success of the work in the actual building. The more nearly our drawings approximate in delicacy, expressiveness, and refinement to those of the Burlington-Devonshire collection the better will our detail be.

Mr. MAURICE B. ADAMS remarked that architects had sometimes said after looking at a collection of old drawings that if one of their clerks turned out such work they would conclude he had mistaken his vocation. But in saying this they failed to detect the technical qualities altogether. The object of these artists was to represent what was passing in their minds at the time—they lost sight of every other consideration. The draughtsmanship of to-day was often entirely divorced from such principles.

The discussion was closed by Mr. Leonard Stokes proposing a vote of thanks to Mr. Gotch. This was carried by acclamation.

Mr. J. A. GOTCH, in replying to the points raised, said that early tradition was, of course, very powerful, and it was inevitable that a man who achieved a great reputation should absorb more than he really deserved. But Inigo Jones could spare some of his. It had been asserted by a previous speaker that Whitehall at any rate had nothing to do with Webb. As a matter of fact, at least nine of the drawings of the scheme at Worcester College, Oxford, were by him. The Banqueting Hall is supposed to be the only part of a large design which was carried out. But it is worth considering whether the Banqueting Hall was not built first, and the large design was tacked on to it later. The new west front for St. Paul's was certainly very much as shown on the drawing, except for the portico.

Mr. J. OLDRID SCOTT, F.S.A., architect, has prepared a report on the condition of the tower at All Saints Church, Hereford. An immediate restoration is recommended at a cost of about 3000l. The tower was commenced in the thirteenth century and completed in the fourteenth.

THE PAINT AND VARNISH SOCIETY. STANDARDS OF COLOUR.

(Concluded.)

MR. R. CLAUDE BUSSELL expressed his approval of the suggestions, and said that in considering the subject it might be interesting to remember the standardisation of weights and measures. At first the foot was an arbitrary measurement, and perhaps if an arbitrary shade was taken for a colour, such as royal blue, it might also in time become standardised. Many years' experience had shown him what an extraordinarily difficult thing it was to get a satisfactory colour card. For instance, if a paint was made to match the coloured tab it did not in bulk look a bit like the tab. This explained why architects used the expression "approved tint." No one could predict with certainty what any particular colour would look like *in situ*, the effect produced being greatly dependent on mass and surroundings. (Mr. Bussell exhibited two splashes of paint taken from the same pot, and showed that when the background was changed they had not the slightest resemblance to each other.) Even with the most excellent colour card it did not in the least follow that a man was going to get a colour which, when used, had the appearance of the tint upon the card. The alphabet had only 26 letters, but a great number of ideas could be expressed with it, and he thought if some 50 colours were standardised as a beginning a great deal could be done, as in his experience the whole range of everyday painters' colours were comprised in about that number. He suggested the appointment of a committee to debate the question, and report to the Society. The difficulties that would confront the committee would be those of differentiating such colours as ivory and cream, pink and rose, slate and grey, &c., and also what colour to assign to old gold and such colours. It would also be a hard task to decide what colour invisible green was; and as for nut brown, a man might use an almond, a filbert, or a cocoanut. He thought it would be necessary to start from an arbitrary standard, as in the case of weights and measures, and leave it to this or succeeding generations to improve upon.

Mr. T. A. DAVIDSON thought there was no doubt as to the desirability of standardisation, because it was so much more easy to work to a definite standard than to an indefinite one. But he considered that in the practical carrying out of such a scheme difficulties would crop up. Those difficulties, however, might be met by the standardising of conditions. In preparing the colours the question arose as to what medium the colours were to be mixed with. If made up as a paint with linseed oil as a medium the colour would alter; if kept in a dark place the colour would darken; so that the idea of protecting the colours from change by keeping them in the dark was really a condition that might facilitate change. He did not think the difficulties were insuperable, owing to the fact that the tintometer might enable the various standards to be measured in such a way that they could be made up again at stated periods. Suppose a book was issued containing colour standards, those standards might be reasonably constant for a period of a year or more, and then could be issued again afresh. Our knowledge of the extent of the change effected in different paints and paint materials under different conditions of storage was somewhat meagre, and would probably lead to some difficulties; but these would, no doubt, be overcome by the exercise of some patience and work.

Mr. J. G. MCINTOSH thought one of the difficulties would be the expense to the Society of producing, printing, and publishing a colour book. Mr. Jennings had devoted a great deal of attention to the question, but he had not had the experience in a paint factory, where it was very difficult to obtain the same colours twice from the colour house, and that difficulty was still greater in connection with distemper. Then, why did Mr. Jennings make no attempt to standardise white and black paints? There were as many variations in the whites and blacks on the market as there were in the shades of other paints. Then, were the Society to dictate to all the world what, for instance, was a pure blue? He did not think he had ever seen a really pure blue until a week previously, when approaching the German Ocean from an upland position a good mile off the shore, and that, in fact, was a sea blue, which on a nearer approach would be degraded into sea green; and at what point were they going to draw the line of demarcation between a sea blue and a sea green? How were they going to differentiate between sea blue and sea green, as to where the one left off and the other began? On the market it was possible to obtain samples of Prussian blue which mixed with white lead would produce a pure blue, although out of thirty samples there would possibly be only one really pure blue; all the others would possibly verge towards sea green. Then there was vermilion and vermillionette which approximated to each other. What was to be done in that case? If a

firm ordered ten tons of ultramarine blue per week for ten years from the same ultramarine makers, and took a fair average sample every week, they would not get two samples alike. The tintometer was of no use in connection with paints. Take emerald green of dazzling brilliancy when dry, in oil it gave a paint which could be only compared to a pea-soup whitewash and there was an emerald green in Mr. Jennings's book as black as a hat. Any standardisation would be a millstone round the manufacturers' necks, and he pleaded for variation in colour and not to be tied down to a hard and fast scheme.

Mr. BATTEN thought it had been shown that classification of every colour was a possibility because identification appeared to be. Mr. Lovibond had assured them that identification of any colour could be done in two minutes. If every colour could be identified then certainly all colours could be classified. But that was not the same thing as saying that every colour could be named. It would be quite possible to classify the colours by using numbers and letters, but the trade would perhaps not take notice of it, and a purchaser might not care to order a colour as "KL47892." He suggested that the classification of thousands of colours and tints must be a mere letter and number classification; every colour must have its index, but only a few colours could have names. He doubted whether it was possible to make the names fit in with any scientific interval in the scale of colours. The nomenclature would have to be arbitrary and as far as possible coincide with names recognised in the trade. It might be decided, for instance, that a colour which in the list was KL 4793 should be called peacock blue. *No pigment name should be employed in the list*; to call a colour cobalt would pave the way to fraud. So far from agreeing with Mr. Heaton to abolish silly names he thought they were the only ones that could possibly be used. We should still need the help of the peacock and the canary. The fact that they were "silly" showed that they were arbitrary, and they must be absolutely arbitrary. If the principle were definitely accepted that every pigment name must be eliminated, and if a complete scientific index were made with an arbitrary nomenclature dotted in where it was found the index number coincided more or less with a popular name he thought such an index might be of great value.

Mr. MATT. GARBUTT said there could not be very much doubt as to the desirability of a standard card, but in making the standard series of tints he took it that at first there would be no attempt to be as comprehensive as the French series, of which samples had been shown, which was a very ambitious scheme. In an arbitrary way a selection would have to be made of the most useful tints for ordinary house painters' work, and those would be fixed first. If the scheme was not too ambitious he thought it would be practicable. It would not be possible to invent specific names for 60,000,000 odd colours, but something could be done very much akin to what the Chinese had done with their writing. They started off with a considerable number of radicals, by whose means they classified the characters standing for different ideas and objects. The students had difficulty in memorising the whole of the radicals, but every schoolboy had to learn a definite selection, 214 in number, and combine them in all manner of ways in order to build up characters. If he became a first-rate man at the University he might have to learn 11,000 or more characters before he could read some of the classic books. Probably in the standardisation of colours there would have to be headings, corresponding to the Chinese radicals, such as red, brown, green, and so on, with subheads; and then they would have to fall back on numbers. The objection that it was no good referring to a colour by a number alone would then be destroyed, because the heading would give an indication as to what the colour was. The formula would be, for instance, "Red, vermilion, No. 42." With regard to separating the names of colours from the material producing the colour, that would certainly have to be done; it would have to be colour and nothing else, with no indication as to how it was composed. He thought standardisation was very desirable and quite practicable.

Mr. NICHOLSON said that as a manufacturer, with a knowledge of what some other large manufacturers thought, he would say distinctly these manufacturers would not accept standardisation, because it would destroy, to a large extent, competition, which in the paint trade was very keen at the present time; so keen, that a good many firms could only obtain an order by showing a shade which suited a customer better than the one he was already buying. In the ready-mixed paint and enamel trade the number of different brands were practically the same in composition, and it was only by showing a better shade card that a firm obtained orders against their competitors. He thought that before any further steps were taken the question should be answered as to whether the manufacturers and colour merchants would accept standardisation if it were adopted. He did not think they would.

Dr. SEYMOUR said that, as a professional man unacquainted practically with the matter, it seemed to him there were two ways of looking at the question of colour standardisation. Originally vermilion and cobalt implied colours which were reduced when certain chemical substances were formed, and therefore a theoretical definition of some colours would be that they contained certain chemical ingredients in definite proportions. That, however, did not apply to such colours as peacock blue, a name which was not based upon any definite foundation, but by matching the colour of the bird. That might be called the analytical method. The other method was that described by Mr. Lovibond, whereby the colours were standardised in connection with their ray composition. A colour containing certain rays in certain proportions could always be reproduced by a mixture of pigments. The fundamental colours would be the six in the spectrum, and all colours must be combinations in greater or less proportion of those six fundamental colours. Vermilion originally meant a sulphide of mercury, and cobalt a salt of cobalt, but they meant now colours giving a certain ray composition. Those various shades could be made and matched by the method Mr. Lovibond had suggested. With regard to the two splashes of colour shown against different backgrounds by one of the speakers, it was illustrative of a well-known physiological fact. A green on a red ground looked quite different from a green on another ground, but that had no serious bearing on the question, because any person matching a colour would certainly know of that law from experience, and would not match against a background causing a physiological variation in the colour. The variation in the colour of the spectrum under different lights was a point that did not seem to be thoroughly understood. Two colours that matched in daylight would probably not match when viewed by gas or electric light. The colours were caused by the vibration of the particles, the vibration putting in motion certain rays which were conveyed to the eyes as a sensation of colour. In daylight two colours had all the rays coming to them from the sun, but gaslight contained only a small proportion of the rays which sunlight contained, and if one of the colours contained particles which responded only to a ray in the sunlight, which was not in the gaslight, that colour would not be the same by gaslight, and the colour would therefore look different.

Mr. MARTIN thought every manufacturer would know what was meant by Venetian green, although it was practically a thing of the past. It was a varnish green used for Venetian blinds, and the word "blind" was dropped out. It was as nearly as possible the deepest shade of green in the spectrum. He believed there would be very great difficulty in bringing standardisation into operation, and that when the scheme was submitted to paint manufacturers they would pooh-pooh it. It would be something like trying to influence a decorator to use white zinc in the place of white lead; he was so used to carrying on his business in the old-fashioned way that he would not listen to the suggestion.

Dr. M. B. BLACKLER said that some weeks ago the Council were discussing the lectures to be read before the Society, and he called attention to a book published by the Institute of British Architects, and suggested that a discussion should take place in the Society on the subject, whereby the lecture delivered on the last occasion originated. Then Mr. Jennings, in a private interview, stated it would be desirable to introduce a standard colour scheme on the same lines. The idea was formulated on the assumption that the Society had taken up a middle position; it was a society combining in its membership science and practice, and therefore any scheme that might be attempted need not have the scientific accuracy which certain people seemed to demand, while at the same time it might be, nevertheless, suitable for general use. At the present time manufacturers produce colour cards, in many cases not according to any set idea, but the colours being chosen according to personal bias of the man choosing them. The object of the present scheme was first to select fifty or sixty of the more common colours chosen, as had been done by a well-known firm, and the tints made up into a book by the Paint and Varnish Society. If the manufacturer would not use the book, the Society would still be in a strong position, because the object was to put it into the hands of architects. If the manufacturers would not provide what was required, architects having the book would suggest to their customers that they could follow it, and the manufacturer would find it desirable and convenient to supply the standard tints. Consequently, in course of time, they would be compelled to work according to the standard book, and would ultimately come to the conclusion that it was much more satisfactory than the rule of thumb method now prevailing. Many members spoke as if paint manufacturers always supplied pure colours, but that was

a mistake. They supplied tints, and the tints were not always made up of pure colours, but were brought to standard by means of various pigments. From a practical point of view many different pigments could be used to produce the same tint. He agreed with Mr. Jennings as to the possibility of a number of the representative societies uniting in picking out the few colours necessary and in that way producing a book of standards that would be of great value.

Dr. Blackler then moved, "That a committee be appointed to take measures to issue by this society a British Standard Colour Card of Paints and Distempers."

Mr. J. CRUICKSHANK SMITH did not think the time had come for the Society to take a definite position in the matter. The opinions expressed that evening had been exceedingly instructive; in fact, he did not remember a debate during the last two years that had been so instructive, or had led to such a conflict of opinion. Before deciding to do anything in the matter there should be an opportunity of discussing it in the Council, so as to discover the best means to be adopted, or whether it was a matter that ought to be adopted at all. He was not at all clear that such a thing was feasible or advantageous, but he had quite an open mind in the matter. Still the Society ought not to proceed too precipitately, and he therefore moved as an amendment, "That while recognising the importance of the matters raised by Mr. Jennings, this meeting does not think that the Society should commit itself to a definite line of action at present, and asks the Council to consider the whole matter and report."

This was seconded by Mr. C. HARRISON, and being put to the meeting was carried. The original motion was then withdrawn, and the amendment put as a substantive resolution, and carried.

Mr. JENNINGS, as the hour was late, made his reply upon the discussion very short. He said the whole point was that three different bodies would decide on naming a certain colour or hue, and that would be issued in the book and the manufacturers might at first pooh-pooh it, but when they got a large number of orders for that particular shade, say, of myrtle green, they would no longer pooh-pooh it, but immediately set to work to make that shade. The dissociation of names and pigments he thought was highly desirable. He could not follow Mr. McIntosh in his arguments, nor quite follow Mr. Bussell. It was quite true that a colour in position would not look the same as in the book, but a man wanting to choose a tint of light green for a ceiling would take the card and look at the colour when in position. That was almost always done, a small portion of the colour being tried on the spot to see whether it had the desired effect.

The proceedings then terminated.

UNIVERSITY OF LONDON LECTURES ON ARCHITECTURE.

MR. EANISTER FLETCHER continued the subject of Early Christian Architecture in his lecture at the British Museum on Tuesday, March 7.

With the spread of Christianity places of worship for the new religion were erected in every part of the Roman Empire; in some instances pagan temples were converted to the uses of the new faith, as seen in the Cathedral at Syracuse, originally a Doric temple of Minerva, where openings were made in the cella wall, forming aisles, and the spaces between the columns of the peristyle were closed in, thus giving an enlarged interior; but more often new buildings of the basilican type were erected.

Examples of Early Christian work are to be found at Ravenna, Torcello (near Venice), Syracuse in Sicily, and Eastern Europe; Bethlehem and Jerusalem; and in the Eastern Roman Empire, Constantinople, Salonica, Istria, and Egypt, especially around Cairo, but time would not allow, the lecturer said, to deal with the latter.

The importance of the city of Ravenna, which at one time rivalled Rome, accounts for the number of very beautiful Early Christian churches we find there, dating from the fourth, fifth, and sixth centuries. It was created an archiepiscopal see in 438 A.D., and was the residence of the Gothic kings from the time it was taken by Theodoric in 493 until 539, when it became the seat of the Exarch of the Eastern Roman Empire until 752.

The Church of St. Apollinare Nuovo (Ravenna) was erected by Theodoric as an Arian cathedral, but in 570 it was converted into a Catholic church. It is of the basilican type, having three aisles and plain external treatment. The

entrance at present is through a narthex, but originally an atrium formed the approach. To the side of the church is an example of one of the earliest bell towers. In the days of persecution the faithful were summoned secretly to the services by messengers; in later times wooden clappers were used; and finally, towards the sixth century, bells were placed in towers adjoining the church erected for the purpose.

The nave arcade has twenty-four columns, which support semi-circular arches springing direct from the dossier or impost block, which was usually a square, deep block of marble placed over the capital in order to strengthen its appearance, and the better to carry down the line from the arch to the column, in some degree replacing the entablature. The Corinthian capital was not designed to carry an arch, but a horizontal entablature; its hollow bell-shaped outline seemed little adapted as a support to the weight of an arch, and by degrees special capitals were designed having a convex outline, which were better suited to the work they had to perform.

The long blank spaces above the columns corresponding to the triforium of a Gothic church seemed eminently suited to treatment in mosaic. The town of Classe is here represented, with buildings, sea and ships; a procession of twenty-two virgins robed in white and gold, and the three Magi approach the Madonna, enthroned between angels. The whole is executed in brilliantly coloured mosaic. On the opposite side is the city of Ravenna, with its church and palace of Theodoric; twenty-four saints with wreaths approach the Christ enthroned, with angels on either side. The spaces between the windows are filled with apostles and prophets in mosaic representing niches with shell-covered vaults.

St. Apollinare in Classe, dating from 534-539, is very similar in plan and treatment; it was built on the former site of a Temple of Apollo. Its circular campanile is the oldest known.

The lecturer then dealt with the Syrian examples, the Church of the Nativity at Bethlehem, and the Church of the Holy Sepulchre at Jerusalem. He referred to M. de Vogué's "Architecture of Central Syria," in which the extreme scarcity of wood is mentioned, and the consequent entire use of hard stone (which abounded) for doors, windows, and even for roofs. The Church of Qalb-Louzeh, dating from the sixth century, is built entirely of coarse stone.

The Church of the Nativity was erected by Constantine over the traditional birthplace of Our Lord in 330 A.D. Justinian (527-565) restored it, and again in the fifteenth century it was repaired, King Edward IV. of England giving lead for the roof and Philip of Burgundy the pine wood.

In the seventeenth century the Turks stripped the roof to make bullets of the lead. The church is now the joint property of the Greeks, Latins, and Armenians.

It is of the typical basilican plan, 215 feet long by 103 feet wide, having double aisles and transepts; there are apses at either end of the nave, the choir end being triapsal, and beneath it the crypt, which also consists of three chapels—the Chapel of the Nativity, the Chapel of the Manger, and the Chapel of the Holy Innocents. The spring which served the Holy Family is also here.

The unfuted monolithic columns of the church measure 19 feet in height, and were specially made for the building by Constantine's order, never having served in any pagan temple, as was the case with most of the columns in the early churches. The order is Corinthian, and supports an entablature and not arches. The plain wall of the clerestory is 32 feet high, originally treated with mosaic, of which there is but little left. The roof dates from the seventeenth century. The Chapel of the Nativity is paved with marble, with which the walls are also lined. There is an altar in the small semi-circular recess, which is treated with mosaic, dating from the time of Constantine. A silver star is set in the pavement, with the inscription, "Hic de Virgine Maria Jesus Christus natus est."

The Church of the Holy Sepulchre was also built by Constantine over the reputed tomb or sepulchre of Our Lord. It was rebuilt by the Crusaders and altered and defaced by the Saracens. The dome is of modern times. In character, as seen to-day, it resembles the architecture of Sicily and Southern Italy of the twelfth century. Originally a colonnaded atrium led to the basilican body of the church, which adjoined the rotunda which is over the Sacred Tomb. The whole was rebuilt by the Crusaders in 1099. An apse was added to the rotunda in 1103 to 1169.

This type of building has frequently been copied, as seen in Charlemagne's tomb at Aix-la-Chapelle, the Church of St. Gereon at Cologne, Little Maplestead Church in Essex, and the Temple Church in London.

Mr. Fletcher then proceeded to deal with the baptisteries and tombs of the Early Christians. In the early days of the Church the sacrament of baptism could only be administered by a bishop; for this reason, the baptisteries in each city are found attached to cathedrals and not to parish churches. The ceremony took place at the three great festivals of the year, when people flocked from all parts; it was consequently necessary to erect special buildings large enough to receive them. Baptism in those days was by immersion, and often the porphyry baths from the thermæ were made to serve. It was not until the sixth century that the font was introduced.

The oldest baptistery is that of Constantine, which forms part of the basilican church of S. Giovanni in Laterano. For many years it was the only baptistery in Rome, and it served as a model for later buildings. S. Maria in Cosmedin, known as the Baptistery of the Arians, and S. Giovanni in Fonte at Ravenna are other examples which were described.

The tomb of the daughter of Constantine, S. Costanza at Rome, the tomb of Galla Placidia at Ravenna, and other tombs were also discussed by the lecturer.

THE ILLUMINATING ENGINEERING SOCIETY. THE LIGHTING OF SCHOOLS.

A MEETING of the Illuminating Engineering Society was held in the rooms of the Royal Society of Arts on Thursday, February 16, when a discussion on "School Lighting" took place. The President, Dr. Silvanus P. Thompson, F.R.S., was in the chair.

The Hon. Secretary read the minutes of the last meeting and also the names of applicants for membership.

The President then called upon Dr. James Kerr, Medical Officer (Education) London County Council, to read a short paper on "School Lighting—Natural," as follows:—

When a doctor attempts to introduce a technical discussion before a company of experts he must be excused if he deals with it in a baldly practical manner, and not in the finer and more scientific way which would be most interesting to the members of this Society.

I have to deal shortly with school lighting under natural conditions, Mr. Bishop Harman introducing the subject of artificial lighting.

It is in consideration of eye diseases that school lighting is of most importance to the doctor. The first man who worked extensively at school lighting was Dr. Hermann Cohn of Breslau, on whose tombstone may be read "Augenkrankheiten zu verhüten betrachtete er als seine Lebensaufgabe," and it is interesting to know that it was from his work that modern school hygiene has developed both in Germany and in this country.

Cohn's work was mainly occupied in investigation of the working conditions of the individual child, which indeed is the best way of examining the question.

His method of testing the lighting in the various parts of a school-room was by using the Weber photometer, which is too well known to need description here. He worked out the great variations with seasons of the year, and also distances from the windows. This still requires charting for the normal school-room.

For school purposes Wingen's photometer has been used in the London schools, and Mr. Harman will speak of it.

Cohn, however, recommended a simpler plan, which incidentally throws a side light on the German schools of forty years ago in his suggestion to count the number of scholars in each room from whose place no part of the sky is visible. Then he developed the idea of the measurement of the solid angle of sky seen from each place by measurement with the stereogoniometer or Raumwinkelmesser, as he called it, devised by Weber for him.

He used a lens of 11.5 cm. focus to throw an image of the window on a paper divided up into squares of 2 mm. side. On counting up the number of squares in the area of the image of the sky, and multiplying by the sine of the angle of inclination of the lens he got a number which he called the reduced solid angle, and which was equivalent to the area of sky overhead which would equally illuminate the spot measured. This method is approximate and yet tedious, but quite within range of errors of experiment for practical school purposes. I have taken a hint from the pin-hole camera of Pleier, who photographs the window with a pin-hole, and places a gauge made by calculation over his photographic plate. Calculating out the solid angles, and reducing them, one gets a chart which, when photographed by a lens in a certain position, yields a gauge of reduced solid angles for

any image thrown by the lens. Using a small camera obscura and spectacle lens a little apparatus is made for a shilling by which more rapid results can be permanently recorded on thin paper with the gauge than by more costly apparatus.

These methods, however, only measure direct skylight, and neglect reflected light, which in a properly arranged school-room is of great importance.

Another instrument has been used which is very neat and convenient, and which enables one to measure the relative distribution of light in a room, measuring the illumination from all sources in relation to the direct light from the sky. This is Thorner's light tester. The surface-brightness of a card on a spot to be tested is viewed through a small hole in a white diaphragm of the instrument. On this diaphragm by means of a small mirror and lens an image of the bright

sky is thrown. Stops $\frac{F}{5}$, $\frac{F}{6}$, or $\frac{F}{7}$ can be used to vary the brightness of the image. $\frac{F}{6}$ is generally used if the place is

not bright enough for school work. The card appears dark through the hole, otherwise it appears brighter.

Probably by using an iris diaphragm, and carefully graduated scale, this instrument could be made to give relative values for the illumination at any point in a room.

A more elegant little instrument, which I only know from its description to this Society, is the "Holophane Lumeter," devised by Messrs. Dow & Mackinney. It appears to be portable, accurate, and capable of measuring the surface-brightness of any part of a room, so that it will be of value in determining the reflective power, for instance, of materials for walls or curtains, as well as for measurements of the lighting on school desks. This, of course, gives quantitative measurements, and does not compensate like the last instrument for varying sky brightness.

From the descriptions given it will be seen that measurements of various kinds are made by these different instruments, of which there are numerous varieties, and of which I have only quoted types:—

1. The measurement of solid angle of sky, which only gives direct illumination from the incident light, and except as regards minimum measurements is not of much value.

2. The measurements by photometers (Weber's, Wingen's, the Lumeter) give quantitative results, which, for scientific investigation of lighting are a necessity. With light which varies enormously day by day, hour by hour, and inch by inch, it is doubtful how far exact measurements are wanted, at least by the ordinary school doctor, who has to pass an opinion on school lighting.

Very much depends on the eye itself. The eye and ear are about balanced as gateways of knowledge in school; perhaps the eye is the more important.

In the very young school child the mental effect seems largely proportional to the volume of retinal stimulus. The larger the image of a letter, for instance, the better it is recognised. There is a mental concentration required to recognise a letter which is quite well known, but which is also projected as a very small image on the retina. This means fatigue, which the young child always avoids as far as possible. Again, the undergrown or underdeveloped eye of the young child with its short axis means an excessive amount of effort of the ciliary muscle to accommodate the lens and focus the image on the retina, especially for near things, and I think young children often give up the fatigue of accommodating to get a clear image, and by bringing their heads nearer the object get a large image, not so well focussed perhaps but giving a greater retinal stimulation. Poor illumination affects this retinal stimulus and leads to the eyes coming nearer the work, and this short eye to work distance is the earliest and worst school habit in its ultimate effects on the eyes, if these are in any way liable to damage. So that good lighting is particularly necessary in the infant departments.

Again, many years ago, being struck by the variable results of eye testing in a well-lighted room in one school on a hill, on tracing out the cause it was found that this was due to a reading lesson taken in a room exposed to the west, with the afternoon sun causing a certain amount of glare effect and fatigue on the eyes when they were tested in another room.

For this reason the test types which I had drawn in 1894 to be available at all distances from 10 to 20 feet, had a series of square dots added 1.4 millimetres side and 1.4 millimetres between each square. This is seen clearly by a normal eye as a row of square dots at 20 feet if the light is sufficient for

eye testing, but becomes fused into a line if the light is too poor for use.

On the other hand to test readily illumination in its effects on the eye, I mounted test type of the size known as J₁, on a glass slide, to keep it clean, and used it at a distance of half a metre, as a test of sufficient illumination. This neglects the accommodation, and in a hypermetropic person or anyone above 40 years of age it would be necessary that correcting glasses for this distance should be worn. If that is done then probably for all practical purposes the reading of diamond type at half a metre gives security that the standard of minimum illumination is attained.

The lighting of the school-room depends principally on the window area. For most of the work done in school it is advisable that the light should fall from the left. The windows on the left side of the room should be as large as possible from the point of view of lighting. They ought to be at least one-fifth of the floor area. Questions of ventilation and loss of heat in winter cooling and draughts make too large windows costly in heat.

Skylights, which are used in industrial buildings, might be used so far as lighting was concerned, but there are difficulties about heat in summer, and rain or melting snow in winter.

Window lighting facing the children ought not to be permitted, and conversely windows behind the children when the children sit in their own shadows ought now to be stopped. There are many rooms still existing, with this defect; and it is somewhat absurd to walk into a class-room of girls and find the girls sitting on the desks with their feet on the seats, doing their sewing, so as to catch the window light, which in the ordinary position at the desk they would lose.

The rapid diminution of light with distance from the window, which the photometer shows even in the length of one's own writing table, makes it inadvisable to have class-rooms wider than about 20 feet. Practical considerations of ventilation make 13 feet about high enough with these dimensions.

A class-room for 36 to 40 children, which is about the standard size likely to be attained, would therefore be 20 or 22 feet wide, and would have about 120 square feet of window surface, beginning about 3 feet 8 inches from the floor and extending to the roof.

Many rooms, however, are capable of great improvement by proper colouring. All class-rooms above 5 feet from the floor should be coloured very lightly, almost white. Beams and rafters cause much loss of light, and as they are generally stained darkly, a coating of white paint should always be ordered.

Where there is insufficient window area all the aid possible is required from reflected light and the more distant parts of the room may require some help by the use of prism glass or of external reflectors. In using these aids care must be taken to avoid glare effects.

Glare arises when the brightness of illumination of an object whose image falls peripherally on the retina is relatively great compared with the object whose image is centred on the yellow spot. Light incident almost horizontally on the eye from ribbed glass or prismatic glass, especially if there is sunlight falling on the glass, is often very irritating in this way. The glass itself may be unsatisfactory. All kinds of obscured glass are objectionable, and so, too, unless it is absolutely necessary to ensure privacy for instance, patterned glass should be avoided. But windows often have their light transmitting capacity influenced in other ways. Not long ago I spoke of the windows of an infants' school as requiring the ground glass removing, and found that it was merely dirt.

Lastly, although hardly within our subject, there is the consideration of whiteness of paper and character of ink. The Gothic print, for instance, is a serious handicap of the German school child, and some of the watered ink and poorly printed stuff seen in schools, even when badly lighted, is well worth the attention of school inspectors.

We may sum up then by saying that for the best effects of natural lighting in schools, properly planned schools with sufficient window area of clear glass, and well coloured walls to distribute the light are required; and further, that attention should be paid to the pupils' position, and also to their attitudes; that their work should be such that clear images can be formed on the retina without excessive fatigue.

The President said that unfortunately the author of the second paper, which was on artificial lighting, was unable to be present, he was sorry to say, through illness. Mr. Harman hoped to be present at the next meeting, when the discussion would be continued, and intended then to show some lantern slides to illustrate his paper. As Mr. Harman's

paper was relied upon to introduce the subject of artificial lighting, it would be necessary for it to be read in some form, and he would therefore ask Mr. J. S. Dow, the Assistant Hon. Secretary, to read it.

(To be continued.)



[The Editor will not be responsible for the opinions expressed by Correspondents.]

The King Edward National Memorial.

(The Lord Tenterden Crystal Palace Memorial.)

SIR,—Although a great deal has appeared in the daily press, and we have distributed a great many thousand circulars and forms, and sent details of the scheme to every inquirer, we yet receive many communications asking why we make no public appeal for funds in the press. We therefore beg to be allowed through your columns, in conjunction with the whole of the daily and weekly press, to definitely invite subscriptions for the purpose of acquiring the Palace as a National Memorial of our late beloved King; for renewing and modernising its departments and attractions; placing it at the service of the nation for ever; and devoting all its profits to national and popular objects. The control of the Palace under the proposed régime will be vested in fourteen persons.

Four persons appointed by the Government (two from the House of Lords and two from the House of Commons);

Four persons appointed by those who contribute over 1,000l. each;

Four persons appointed by this Council; and

Two persons appointed by the Lord Mayor or his committee.

Subscriptions are being received daily. Cheques should be crossed Lloyds Bank, St. James's Branch, and should be sent addressed to the Hon. Treasurer, the Right Hon. the Earl of Kinnoull, 26 Shaftesbury Avenue, Piccadilly Circus, London, W. A certificate entitling its holder to life admission to the Palace on completion of the scheme is given to each subscriber of one guinea and upwards. And each contributor's name will be placed upon the Great Historic Roll, which will be placed in the Palace.

To accommodate the poorer sections of the community and those who wish to enter their whole family, subscriptions are being received in instalments spread over one year.

Thanking you for allowing us to make this very brief appeal,—Yours faithfully,

TENTERDEN, *Chairman.*

KINNOULL, *Hon. Treasurer.*

DECIES.

ALFRED E. TURNER, K.C.B.,
Maj.-Gen.

W. H. TREACHER, K.C.M.G.

W. P. TRELOAR, Bart.

W. J. POTTER.

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HUGH GILZEAN REID, Kt.

RICHARD CHALONER, M.P.

A. ST. G. HAMMERSLEY,
K.C., M.P.

H. A. WATT, M.P.

P. A. GILBERT WOOD.

Council Office, 26 Shaftesbury Avenue,

Piccadilly Circus, London, W.:

March 15, 1911.

SIR,—Will you permit me through your columns to draw attention to the following proposition submitted with good effect to the County, City, and Borough Councils of London:—"That the Crystal Palace and grounds, when acquired, should constitute London's gift to the Empire; to be main-

tained at the expense and by the joint control of the Parliaments in the King's dominions"?

The Paddington and Stepney Borough Councils have already concurred in this suggestion. In no case has an adverse view been expressed. Sir Homewood Crawford, city solicitor, writing from the Guildhall, states that he "welcomes this suggestion." Lord Rosebery has been good enough to state, with special compliments, "that he is by no means adverse to the idea." The Duke of Argyll endorses the proposition, and says "he hopes that the Crystal Palace may be preserved for its beauty and because there is no place so good for the people's entertainment." View after view might be given of prominent public men in sympathy with the suggestion.

The Prime Ministers of the overseas dominions, with but one neutral exception, are in general sympathy with the Crystal Palace as an "Exhibition Empire Centre."

Almost as much can be said for ex-Prime Ministers and Opposition leaders.

The following expressions from a few Australian Labour M.P.'s might be taken as typical.

Senator Hugh de Largie (Government Whip) refers to the matter in terms of "Pegging away at the good work of Empire cementing, which is even more necessary now than some time ago, seeing that we have lost such an able and energetic King as his late Majesty. Wishing every success."

Dr. William Maloney, writing in a eulogistic strain, states:—"I support the Domes and Grounds of Empire."

Frank Anstey writes:—"A magnificent idea. In all England there is no more suitable place for the realisation of your conception than the grounds of the Crystal Palace." Mr. Thomas Tunnecliffe says:—"The proposal has my hearty endorsement. It is a great scheme, and I hope the matter may be taken up. Something of the kind is urgently needed, and you seem to have struck the right idea." (Melbourne, May 16, 1910.)

Thus the voice of Australian Labour. Mr. Alfred Deakin writes, taking pains to describe his action in giving sympathetic effect in a practical manner to his appreciation of the suggestion. So might be mentioned other Opposition and Ministerial members in all the Australian Parliaments, together with very favourable press comments. The same can be said of New Zealand, South Africa, Newfoundland, and Canada, which might be summed up in the words of the Hon. Amédée Forget, Lieutenant-Governor of Saskatchewan:—

"The aim of 'Domes and Grounds of Empire,' which I have read with interest, and your patriotic enterprise for having a permanent object-lesson ever before the eyes and minds of the subjects of the Empire in the grounds of the first International Exhibition, is worthy of the approval of all who claim the British heritage." (Regina, Canada, May 28, 1910.)

The loyal press of India is equally enthusiastic. And now, pending the decision or otherwise of the Crystal Palace and grounds becoming a memorial to the late King, will you permit me to urge that if, as "London's gift" the historical Crystal Palace and grounds became the property of the Empire, it would, as an Empire centre, exercise a far-reaching influence?

I have discovered during the last few years that comparatively few persons are against the resuscitation of London's old pleasure resort on the lines indicated. Perhaps not more than one person in a thousand. The desire for welding together the scattered forces of the Empire by a form of rendezvous will not, so far as Australia is concerned, be entrusted to any influence other than national, or the joint ownership and control by the Empire.

The "Grounds of Empire" held in common by the Parliaments in the King's dominions would be a guarantee against failure or degeneracy of aim.

Knowledge and a deeper sense of responsibility of Empire citizenship, improved trade relations, and the discovery of new and wider markets, would mark each year with increasing success. A nominal charge for admission would make this elevated "Land Mark of the Empire" self-supporting, ensuring a fund for the provision of novel and elaborate attractions, varying with the rotations of season.—Yours truly,

Gascoyne, Snakes Lane, Woodford Green: W. A. BAYST.

March 16, 1911.

Mr. A. B. PLUMMER, diocesan architect, has been instructed to prepare plans for the proposed enlargement and repair of Wooler Parish Church. The preliminary project is for work at an estimated cost of about 3,000l.

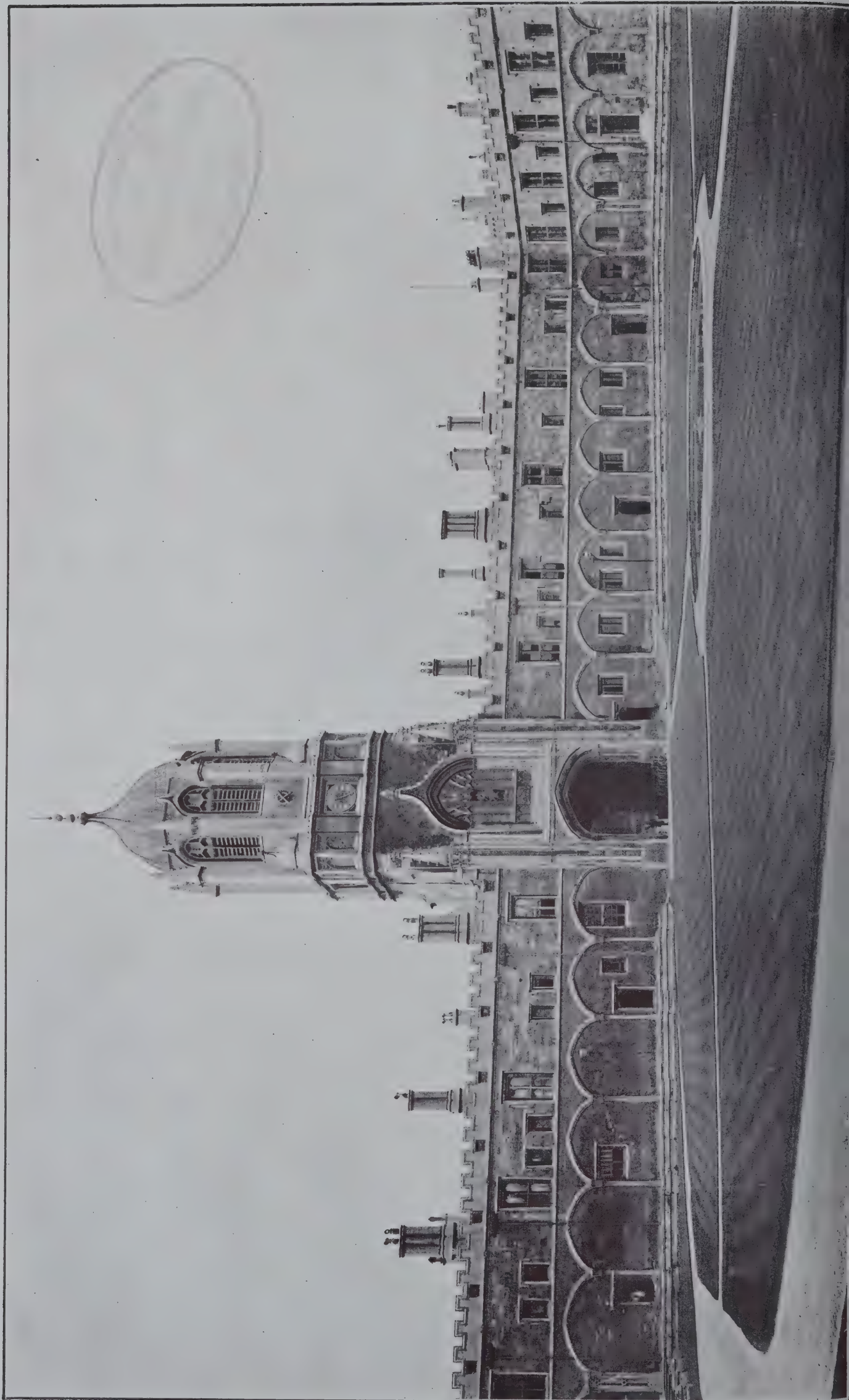




Photo by A. E. WALSHAM, 60 Doughty Street, W.C.

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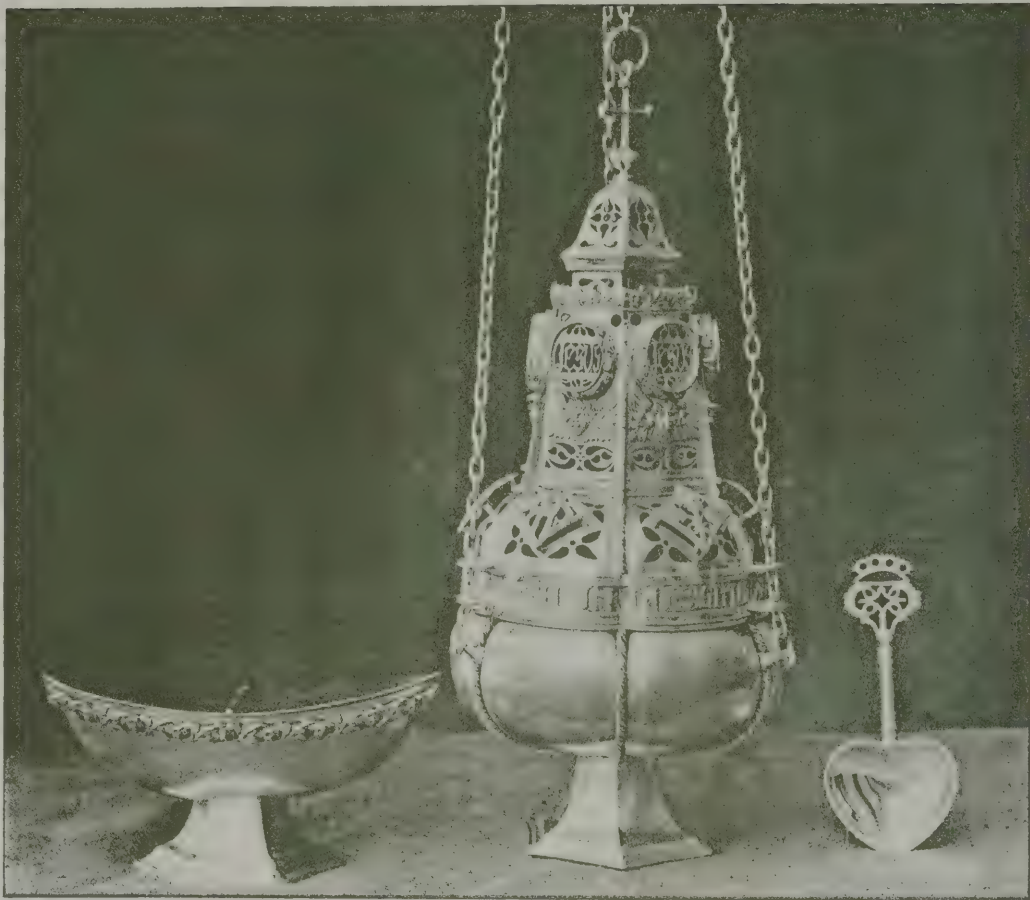
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RETABLE IN COPPER REPOUSSÉ AND SILVERED. IN THE CHAPEL OF ST. THERESA,
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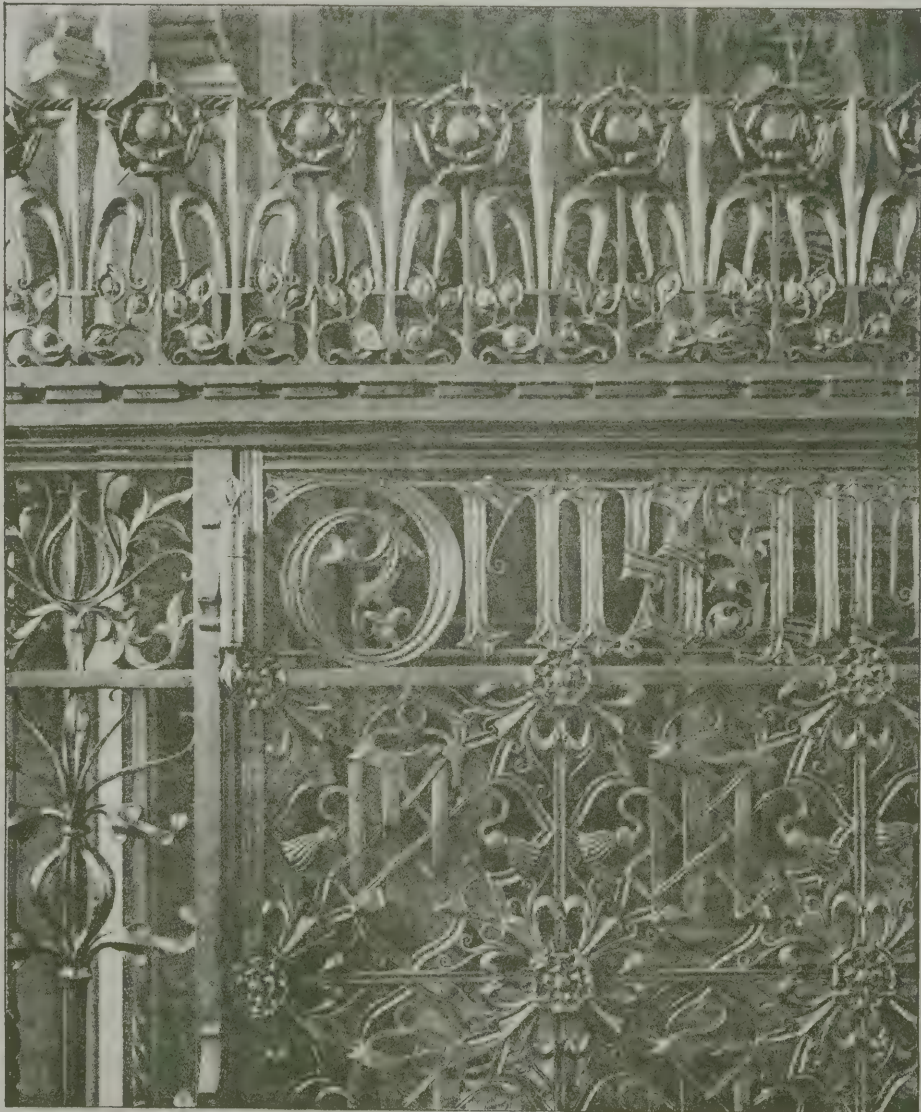


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SEVENTEENTH CENTURY MONSTRANCE IN SILVER. CATHEDRAL OF CADIZ.



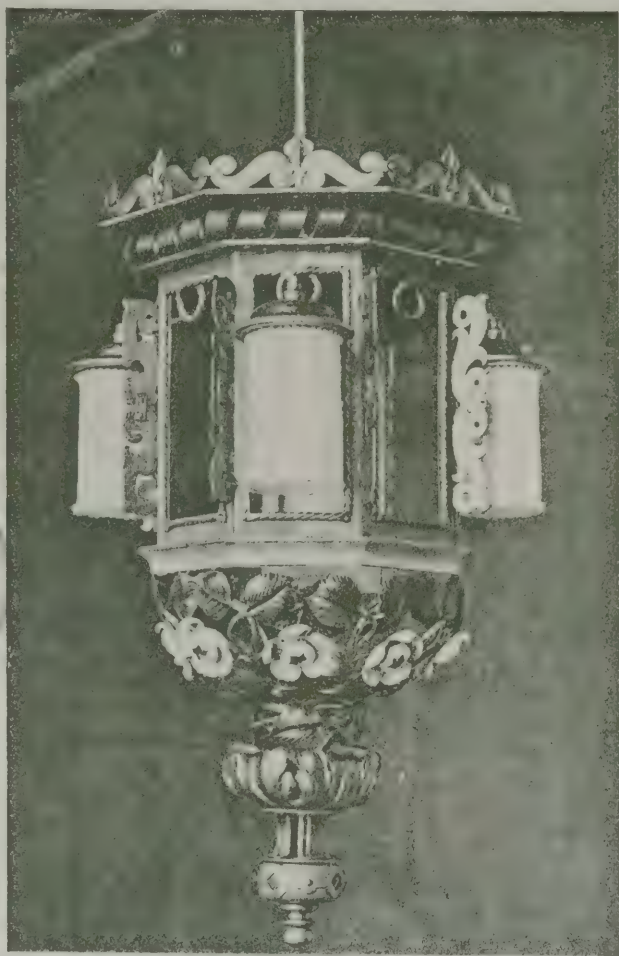
SILVER CENSER. &c. CHURCH OF THE ASCENSION, MALVERN LINK.
Designed by Mr. W. BAINBRIDGE REYNOLDS.



DETAIL FROM SCREEN. ST. NEOT'S.
Designed by Mr. F. A. WALTERS, F.S.A.



PRIMATIAL CROSS
Designed by Mr. F. A. WALTERS, F.S.A.



ELECTRIC LIGHT PENDANT, FANHAMS HALL.
Designed by Mr. W. BAINBRIDGE REYNOLDS.



INTERIOR: THE CATHEDRAL, LUBECK.

The Architect.

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FORTHCOMING EVENTS.

<i>Saturday, April 1.</i>
Architectural Association : Spring Visit to the Royal Academy of Music, Marylebone Road, by permission of Mr. Ernest George, A.R.A.
<i>Monday, April 3.</i>
Architectural Association : Prof. Selwyn Image on "Architecture in Painting." Nomination of Officers for Session 1911.
Liverpool Architectural Society : Annual General Meeting.
<i>Tuesday, April 4.</i>
Nottingham Architectural Society : Annual General Meeting.
<i>Wednesday, April 5.</i>
Edinburgh Architectural Association : Annual Business Meeting of the Associates' Section.
<i>Thursday, April 6.</i>
Society of Architects; Mr. Percy Macquoid, R.I., on "English Furniture."
Concrete Institute : Mr. C. Percy Taylor on "The Reinforced Concrete Pier at Swanscombe."

THE CATHEDRALS OF NORTHERN FRANCE.

THE wealth of Northern France in the most remarkable examples of the ecclesiastical architecture of the middle ages, and particularly of the thirteenth century, will ever make this corner of Europe a happy hunting ground for the student of Gothic art. Any attempt to incorporate an adequate description of the church building of mediæval times as exemplified in Northern France in one volume must result in an overwhelming size of that volume; hence we are not surprised to find in the latest of the popular guides* to ancient architecture that Mr. T. FRANCIS BUMPUS has given to the public a perhaps somewhat arbitrary selection and restriction of examples.

The church architecture of Brittany has so many salient points of difference from that of Normandy and the Isle de France, that the Breton cathedrals of Rennes, Quimper, Saint Brieuc and Vannes might very well be separately considered, but an account of the cathedrals of Northern France which omits Auxerre, Laon, Lisieux, Noyon, Senlis and Saint Omer is essentially devoid of completeness, both for the tourist and the student. The tourist, in visiting the cathedrals described by Mr. BUMPUS, must pass others of which no account is given. The student can scarcely understand thoroughly the development in France of Pointed Gothic architecture without reference to Laon and Senlis.

We must understand, therefore, that the book now before us gives a description of some only of the cathedrals of Northern France, the limitation being to those churches which are actually the seats of bishops at the present day. The scheme of arrangement is not in any way chronological, but to a certain extent topographical in that the several cathedrals described are grouped in their respective archiepiscopal provinces. Thus Amiens, Beauvais, Châlons and Soissons follow Rheims; Bayeux, Coutances, Evreux and Seez are grouped under Rouen; Blois, Chartres, Orleans and Versailles under Paris; Arras under Cambrai; Le Mans, Angers, Laval and Nantes under Tours; Troyes, Nevers, and Moulins-sur-Allier under Sens.

Before proceeding to describe in detail each of the churches he has selected from the cathedrals of Northern France, the author, in an introductory sketch, prepares his readers, whom we may take to be mainly intelligent tourists and amateurs of architecture, for particular study by a general exposition of cathedral building in France and the relative position of the Church and the State. In this he points out that the French cathedrals, unlike our own, were mainly the work of the secular clergy rather than of monastic bodies, and erected as a counterblast to the bid for popular favour made by the monks.

Thus it is that the cloister, the chapter-house, and other collegiate buildings are so rarely found in conjunction with French cathedrals. Another interesting point to which the author alludes is the multiplicity of "Uses" in the Gallican Church, which thus, as in other ways, showed its partial independence of the see of Rome until the time of NAPOLEON III.

The descriptions of the individual cathedrals of which the author treats begin with Rheims, characterising which he quotes the expression of an eminent French antiquary—"Le Parthénon de notre Architecture Nationale." The history of the church is given and the claims of the various architects whose names are traditionally associated with its erection are discussed. In his "Foreword," however, the author is able to give some later information which he has obtained from M. DEMAISON, the Municipal Archivist of Rheims, who communicates the fact that the cathedral of Rheims was begun on May 6, 1211. JEAN D'ORBAIS furnished the plans for the whole building, carrying out the choir and probably the greater part of the transept. His successor was JEAN LE LOUP, who directed the works for sixteen years. He undertook part of the nave, and also the great western front, which was continued by GAUCHIER DE REIMS from 1250 to about 1260. Following him was BERNARD DE SOISSONS, who constructed the nave from the fifth bay to the ninth bay inclusive, and the great circular west window. BERNARD continued to carry on the work till 1287, soon after which date ROBERT DE COUCY became Master of Notre Dame, and to him are attributed the four first western bays of the nave. In his discussion of the authorship of the design of Rheims Cathedral, Mr. BUMPUS brings in WILARS DE HONECOURT and his sketch-book as an illustration of the life and manners of mediæval architects.

The chatty style in which the author discourses of the history and the architectural treatment of Rheims and the other cathedrals that he describes is eminently suited to please the non-professional reader or tourist, and yet withal there is so much scholarship and just comparison of the particular building under review with others not only of France but of other countries of Europe that the book becomes valuable to serious students of architecture. Nor does the scheme of the author restrict him to mediæval building. The cathedral of Arras, completed in 1833 is, for instance, an example of modern Classical work, replacing, as it does, the mediæval cathedral.

From the same cause we have the inclusion of such a late Gothic cathedral as Nantes, the only one in France completely of the fifteenth-century style, and hence a specimen of the capabilities of the Flamboyant phase of French Gothic.

In all his descriptions Mr. BUMPUS is careful to include a reference to the stained glass and to the most promi-

* *The Cathedrals of Northern France.* By T. Francis Bumpus. (London: T. Werner Laurie. 6s. net.)



FROM THE LECZINSKI BUREAU.—By RIESENER (Wallace Collection).

ment of the accessories that play so important a part in the general effect of mediæval cathedrals.

The illustrations in the book, although small in size and limited in number, are beautifully clear and sufficiently whet the appetite for a personal acquaintance, to render which the more intelligent we take to be the object of the author's handbook. Plans of eight of the cathedrals are given, which, if not sufficient for the serious student, are at least illustrative of varied treatments of the chevet plan.

NOTES AND COMMENTS.

THE general chorus of disapproval with which the proposal for the London Memorial to King EDWARD VII. has been received is not, in our opinion, without justification. The great charm of St. James's Park has been its freedom from formal gardening. More than any other of the London parks, it has preserved the character of *rus in urbe*. It is, moreover, but a small place, although the fact is at present artfully and artistically much concealed. Hence it possesses a cachet of its own that is unique amongst London's open spaces.

THE especial character of the park is entirely opposed to anything like planning in the grand manner, and the changing of the Mall into a processional road, with the whole scheme of the VICTORIA Memorial has to a large extent altered the atmosphere of the *locale* and practically reduced the size of St. James's Park. One now feels that the park is distinct from the Mall, which is extraneous and beyond its boundary. This having been done, it would be fatal to cut in half what remains by a grand bridge and roadway.

WE could trust Mr. LUTYENS to design a new bridge over the lake which would not conflict with the character of St. James's Park, but we scarcely fancy that this would be such an approach to the grand memorial as Mr. MACKENNA has in view, which latter, we quite agree, is no more than is fitting to commemorate the regard of London for King EDWARD. A grand memorial is all right, but St. James's Park is not strong enough to bear it. This, we think, is the vital error in the present proposal. If the memorial were made part of the processional road and not part of the park, any new treatment of the bridge could be kept in harmony with the park, and Mr. LUTYENS could design such a bridge as well, if not better, than any other architect of the present day.

It should not be forgotten that a statue must have a back, for we can hardly expect Mr. MACKENNA, or any other modern sculptor, to symbolise the dual aspect of King EDWARD as a British sovereign and an English gentleman by a Janus-like presentment. A grand approach to the back of King EDWARD is, therefore, not required, and if Mr. MACKENNA can be persuaded to abandon his "Britannia" and terraces and adopt what

seems to have been the original idea of a screen at the back of the memorial, there would be no reason why a new bridge suitable to the park should not form part of the scheme.

KENSINGTON PALACE, as London's Musée Carnavalet, is ideal. The palace itself is one of the most valuable relics that we have of London as it was, and forms a fitting shrine for records of the past history and activities of the capital of the Empire. Our only fear is that Kensington Palace may all too soon be found to provide insufficient space for the many remains that might be collected illustrative of the life of Londoners from the Stone Age to the close of the last century.

SUCCESSFUL education demands competent teachers. The inferiority of the technical instruction in this country and the paucity of its results are largely due to an insufficient supply of such teachers. The only exception to this has been in the domain of art, and the superiority of art instruction to that of other branches of technical knowledge is due to the fact that Art has an university in the Royal College of Art, where art-teachers have been adequately prepared for their work of imparting instruction to others. The essential characteristic of the Royal College is that it trains its students in Art, not in painting, in sculpture, in architecture, in pattern designing, or in ornament alone. It does not, in short, attempt to make specialists of those who are deficient in general knowledge. Education comes before training.

HENCE we regret to learn that there is a possibility that the present position and methods of the Royal College of Art may be materially altered for the worse, if even it be not reorganised out of existence. To avert this evil fate a memorial to the Prime Minister has been addressed by a large number of members of the Royal Academy, urging that a royal commission should be appointed to take into consideration the co-ordination of the methods of art education pursued by different bodies, aided by public funds or otherwise, throughout the country. The memorial also calls attention to the educational purpose of the national collection of art treasures in the Victoria and Albert Museum.

THIS is, to our mind, of the utmost importance. A museum should not simply be a collection of more or less rare objects, through which the public may wander in a listless bewonderment. It should be regarded rather as a series of examples to illustrate the teaching imparted in an attached school. The value of the Victoria and Albert Museum as an educational agency would be immeasurably reduced if it no longer formed part of the apparatus of the Royal College of Art. Every museum ought to have a school attached to it, and to do away with a school that is closely connected with a museum is rank folly. If the school did no more than induce an intelligent appreciation of the museum its existence would be fully justified.

INTARSIA AND WOOD INLAY.*

(Official Report.)

By MR. F. HAMILTON JACKSON, R.B.A.

ACCORDING to the best authorities the word *intarsia* is derived from the Latin *interserere*, to insert, though there was a similarly sounding word, *tausia*, which was applied to the inlaying of gold and silver in some other metal, an art practised in Damascus, and thence called damascening—at first the two words meant the same thing, but after a time one was applied to wood and the other to metal work. In the Museo Borbonico the word *tausia* is said to be of Arabic origin; and there is no doubt that the art is Oriental. It perhaps reached Europe either by way of Sicily or through the Spanish Moors. Marquetry, on the other hand, is a word of much later origin, and comes from the French *marqueter*, to mark, to spot; it seems, therefore, as if it would be accurate to apply the former term to those inlays of wood in which a space is first sunk in the solid, to be afterwards filled with a piece of wood or other material of contrasting colour cut to fit it, and to use the latter for the more modern practice of cutting several sheets of differently coloured thin wood placed together to the same design, so that by one cutting eight or ten copies of different colours may be produced which will fit into each other accurately, and only require subsequent arranging and glueing, as well as for the perhaps more artistic effects of the marqueteurs of the seventeenth and eighteenth centuries, which were produced with similar veneers. I say "it seems as if it would be accurate," for one has a liking for accommodating one's opinions to what seems a logical deduction, but unfortunately facts are against one. At Ferrara Cathedral the stalls were inlaid with a fine series of perspectives, many of which are unfortunately now in very bad repair, but this disrepair unfolds to us the secrets of their manufacture. The wood upon which the design was developed has thick pencil lines scored over it marking the principal lines of the perspective, and except for this is a smooth plank. There is no sign of sinking or elevation, and it is therefore evident that thin pieces of wood of different colours must have been glued on to form the design in the same way as the later marquetry.

You will scarcely expect me in a poor hour's lecture to trace the historical development of the art in detail. It was made use of by most of the nations of antiquity, but the mediæval craft appears to have been derived from the East. In India elaborate and beautiful geometrical designs are still produced in much the same fashion as in the Middle Ages, for the possibilities of this form of design were exhausted by the Arabs in Egypt and the Moors in Spain, and in Venice there was a quarter inhabited by workmen of the latter race, who made both metal work and objects in wood. Except for the inlaid ivory casket in the Capella Palatina at Palermo, which seems to be a work of Norman times, we have no example of the kind which can be dated with precision before the appearance in the north of Italy of the similar *lavoro alla Certosina*; but since inlaying with small pieces of marble and vitreous pastes was practised in Central and Southern Italy certainly from the twelfth century, there is little difficulty in imagining how its use arose. This work has its derivative still existing in England in the so-called Tonbridge ware, which is made by arranging rods of wood in a pattern and glueing them together, after which sections are sliced off—the same proceeding in effect as that of which the Egyptians made use with rods or threads of glass. In the British Museum are small plaques of glass in which the design was made in this fashion. The wooden border inlays, however, often show considerable fancy and variety.

Historians are agreed that the cradle of Italian carving and inlaying was Siena, where there is mention of a certain Manuello, who, with his son Parti, worked in the ancient choir of the cathedral in 1259. Orvieto was another place where tarsia was produced at an early date, but the craftsmen were all Sienese; Maestro Vanni di Tura dell'Ammanato, the Sienese, made the design of the stalls for the cathedral in 1331, and commenced the work, some remains of which are still preserved in the Museum of the Opera del Duomo. Twenty-eight artists were employed on these stalls, but Vanni di Tura died before they were finished, and they remained incomplete till 1414, when Domenico di Nicolo is recorded as undertaking the work. In 1431 another master is mentioned, who was followed by yet two others. Only four kinds of wood are stated to have been used—ebony, box, walnut, and white poplar. Remains of so early a period as the fourteenth century are scarce, the

great triumphs of the art being much more modern. This Domenico di Nicolo worked for thirteen years at the chapel in the Palazzo Pubblico, Siena, using Taddeo Bartoli's designs: he was one of the best Sienese masters of intarsia and wood-carving, and his work brought him so much reputation that his family name of Spinelli was changed for himself and his descendants to Del Coro; while he was head of the Opera del Duomo in 1400. Unluckily, he is also an example of the small profit to be made even then by conscientious and careful work. Although he was proficient in several kinds of design, in 1421 he had to petition the Priors and Captain of the People for assistance on the score of his poverty, and had a pension granted him, in return for which he took apprentices—yet twenty-six years later he petitions the Signory again. He was then eighty-four years old, and complained that as the art was so little profitable only one pupil wished to continue working at it. That he thought he was pretty prosperous, and therefore resigned his pension (honest man!), but that the expenses of settling his family had been so great that he was unable to make both ends meet, having a sick wife also. He had been a kind of consulting architect to the authorities at Orvieto, having been called thither in 1416 to refix the roof of the cathedral, all expenses being paid if he came himself, in addition to a salary of 200 florins a year. Yet he ended his days in poverty, at a pension of two florins a month.

In early times the various arts connected with building were in close union (as they are here to-day), and it appears tolerably certain that one guild sheltered them all, proficiency being required in several crafts, and mastery in one. We find the same man acting in one place as master builder or architect, sometimes only giving advice, while elsewhere he is sculptor or wood-worker. Similarly the painter, the mosaicist and the designer for intarsia are confused. Many examples might be quoted, such as Giotto, Taddeo Gaddi, and other less well-known names. Minerva the worker was the patron of all workmen in Pagan times, from Pheidias to the lowest pottery thrower, and the four workmen saints, the Quattro Coronati, in Christian times were patrons of all who worked with their hands.

The oldest of the differentiated guilds appears to be that of the painters, at least in Siena, where one was established in 1355, while in Florence they had to enrol themselves in the art of the "medici e speziali," doctors and druggists, unless they preferred to be reckoned with the goldsmiths, as many of them did. Among the painters were included designers of every sort, moulders, and workers in plaster, stucco and papier-maché, gold-beaters, tin-beaters, &c., masters and apprentices in stained glass and makers of playing cards—a most comprehensive guild. Vasari, who is, as usual, rather inaccurate, held a poor opinion of the value of intarsia, which he said "was practised chiefly by those persons who possessed more patience than skill in design." He gives Fra Giovanni of Verona the credit of improving the art "by staining the wood with various colours by means of liquors and tints boiled with penetrating oil, in order to produce light and shadow with wood of various colour," and other treatments with acids, &c., the abuse of which processes hastened the decay of many of the later examples. The first name which he gives is that of Giuliano da Majano (1432-90), the architect and sculptor, who executed as his first work the seats and presses in the Sacristy of SS. Annunziata at Florence, with Giusto and Minore, two masters in tarsia. The scheme for the decoration of the wall of the Sacristy in the Duomo, of which I show you some panels, was his—an Annunciation, flanked by two figures of prophets, Amos and Isaiah, in which the architecture plays a great part in the design, with panels of plants and vases and friezes of delicate ornament; a Nativity, bearing some resemblance to Lippino Lippi's picture in the Accademia, and a Presentation in the Temple, not without a reminiscence of Ghirlandajo's manner. He produced many works in different parts of Italy, and commenced a choir for the Duomo of Perugia, which was finished in 1491 by Domenico del Tasso, to whom the greater part of the credit must be given, since Giuliano went to Naples in 1481, and died there in 1490. They are very fine examples of the ornamental panels (two of which are here illustrated) which divide the interest of intarsia with the figure panels and the perspectives of buildings and cupboards, &c. Domenico del Tasso also did some very elaborate ornament for the benches in the Sala del Cambio, where Perugino's fine frescoes cover the wall above them; and while the character of the design shows that the attribution of the intarsia at the cathedral to him is quite correct, one must acknowledge that the craftsman's pride has led him into almost too great delicacy of manipulation. In such work as this the design has been sunk in the panel, the space filled up with the lighter wood, and

* A lecture delivered at Carpenters' Hall on March 22. Ninth of the Series on "The Arts Connected with Building."

the engraving executed last, in contradistinction to the putting together of the several bits as in the architectural panels.

The brother of Giuliano da Majano, Benedetto, assisted him in his work, and attained great mastery in the art, but gave it up in disgust, according to Vasari, on account of a *contretemps* which befel him when taking two fine chests to Matthew Corvinus, King of Hungary and a great patron of the arts. He did not unpack his chests until he was in the presence of the king, and then found to his great chagrin that the sea-damp had so perished the glue that most of the pieces of tarsia fell to the ground, and though he was able to put them together again pretty well, he gave up that kind of work in disgust, taking to carving instead.

The names of the intarsiatori were legion, and in a brief lecture of this kind it is useless to occupy time with lists of names. Some elaborate choir stalls were made by Leonardo Marti of Lucca, and are preserved in the picture gallery of that city. They show a combination of pierced tracery and inlaid ornament which is very telling, though the forms of the Gothic tracery scarcely marry with Renaissance feeling in the inlaid ornament. The panels above are the work of Ambrogio Pucci, and show the usual perspectives of architecture seen through partly opened window shutters. Here, also, is a door by one of the cloistered intarsiatori, Fra Antonio di Lunigiana, which shows a combination of views, religious subjects (in which the architecture is of much more importance than the figures) and delicate bands of ornament. At the Certosa, Pavia, are some remarkable stalls, apparently made from the designs of Borgognone by Bartolommeo Poli, surnamed della Polla, and restored in 1847 by Count Nava with coloured wax and stucco, materials which do not quite harmonise with the mellow tones of the wood. These are perhaps the finest series of figure subjects in Italy, and the arabesques below are extraordinarily graceful and flowing. At Savona, where Pope Julius II. was bishop, are some remarkably fine figure subjects which have much of the glow of colour and clever composition which one finds in Titian's pictures. The highest point reached by Florentine intarsia is perhaps the series of stalls in St. Maria Novella, made by Baccio d'Agnolo from Filippino Lippi's designs, the execution of which is as near perfection as may be. The Dukes of Urbino were great patrons of the arts, and in the great palace at that city are some wonderful doors covered with designs worked in intarsia. The study of Frederick of Montefeltro is entirely covered with this work, showing below the usual panels a bench in perspective upon which are laid musical instruments and books, and the duke's whole suit of armour as hung in a corner, while there are several figures of philosophers and learned men on other panels. The panels of the bench are represented pierced as being latticed doors of cupboards. At Gubbio, the favourite dwelling place of his son Guido Caldo, was a study decorated in the same manner: the palace is now ruinous, but one of the splendid doors may be seen in the Victoria and Albert Museum.

Several of the most celebrated of the intarsiatori were monks of the Olivetan order, a branch of the Benedictines. Of these the first master was a lay brother, who came from Tuscany in the first half of the fifteenth century and taught the art to the monks of S. Elena, Venice, the island which lies just beyond the public gardens and was so beautiful before the ironfoundry was established on it. His principal pupil was Fra Sebastiano of Rovigno, in Istria, known as the "Zoppo Schiavone," the lame Slavonian; who in his turn taught the two most celebrated of the cloistered intarsiatori, Fra Giovanni, of Verona, and Domenico Zambello, of Bergamo, known as Fra Damiano. Fra Giovanni again was master to Vincenzo dalle Vochhe and Raffaello da Brescia. Of Fra Sebastiano da Rovigno some work remains in the stalls and sacristy cupboards of S. Mark's, Venice. He also worked at St. Maria in Organo, Verona, St. Elena, Venice, Monte Oliveto Maggiore, and St. Michele in Bosco, Bologna. His pupil, Fra Giovanni, of Verona, while still a boy, left Verona and went to Monte Oliveto Maggiore, the principal monastery of the Order, and no one has been able to discover his family name nor who his father was. In 1480 he went to St. Elena, and there spoke to Fra Sebastiano about learning his art, and set about the matter with so much diligence and assiduity that he was soon able to give him valuable assistance. The work was on the sacristy cupboards and the backs of the choir stalls, and consisted of views of the principal cities of the world as they then were. He was also an excellent illuminator, and illuminated many choral books, twenty of which were preserved at Monte Oliveto in 1594. In 1502 he was summoned to Monte Oliveto to renew the choir, which consisted of fifty-two stalls, with backs, seats, arm-rests, and

all things appertaining, a work which he completed in three years. In the early years of the nineteenth century thirty-eight of these panels were moved to Siena and placed in the cathedral choir, where they now are. Another choir, made for a church near which had become ruinous, provided perspective panels to fill the gaps at Monte Oliveto, where the choir now contains forty-eight stalls. Some of the panels show the buildings as they were at the beginning of the sixteenth century. Each stall is separated from the next by a colonnette carved with delicate arabesques. In the Victoria and Albert Museum is a panel of the kind shown alternately with the views, cupboards with open doors showing objects on the shelves and a kind of grating above to let in the air. It is not so delicate in workmanship as Fra Giovanni's, but for that very reason is perhaps better for reproduction as an example of the kind of thing the intarsiatori executed with such marvellous precision and effect. In 1571 he was called to Rome by Pope Julius II., and commissioned to execute the ornamentation of the Camera della Segnatura in the Vatican, the designs for which are attributed to Raphael—seat backs, seats, and doors—and from there went on to Naples, where he did panels in the Sacristy of the Olivetan Church, now known as St. Anna dei Lombardi, of the kinds of which you have seen specimens. These are exceedingly delicate in their workmanship, and have been carefully restored. In the monks' choir of this church are other intarsie, ascribed to Angelo, Fra Giovanni's brother, principally of arabesques, but including four panels of little angels and an Annunciation. In his last years he returned to Verona, where he had made the monks' choir in St. Maria in Organo and the cupboards of the Sacristy. These have the reputation of being the best which came from his hand, and the finest of the period. The Adige was in the church for two months during one of the inundations, but the tarsie did not suffer in the way that Benedetto da Majano's did on their way to Hungary. He died in 1525, and was buried in St. Maria in Organo. Fra Raffaello da Brescia, whose name was Roberto Marone, had a Venetian mother. He went to Monte Oliveto while Fra Giovanni was there, and became his assistant, working also with him at Naples. A fine lectern from his hand is in the Galleria Tosi at Brescia. His greatest work was the fine choir of St. Michele in Bosco, Bologna, where he also made the design for the campanile. The history of this choir is a tragedy. At the time of the suppression of the convents, at the end of the eighteenth century, the populace tore the stalls down, and they were sold for a few pence to the Bolognese marine store-dealers. Only eighteen of the principal row were saved from destruction, which are now in the chapel of the Holy Sacrament in St. Petronio. The hoods and shell canopies were sold for about 2d. apiece. Fra Damiano, of Bergamo, Fra Giovanni's fellow pupil, attained, if possible, even greater reputation. He was considered the finest artist in tarsia of his time, having, "with his woods coloured to a marvel, raised the art to the rank of real painting." He passed the greater part of his life at Bologna, in the Dominican cloister there, into which he was admitted in 1528. Two years later he was commissioned to complete the choir, on the strength of seven stalls which he had produced after his admission. He carried the tinting of the wood farther than Fra Giovanni did, and is said to have had Vignola's designs for the architectural parts.

The Emperor Charles V. was in Bologna for his Coronation by Pope Clement VII., which took place on December 5, 1529. One day he was in St. Domenico admiring the works of art, and doubting that the tarsie were made of tinted wood as he was told, drew his rapier and cut a bit out of one of the panels, which has been left in the state in which he left it in memory of his act. Desiring to see how the work was done, he determined to visit Fra Damiano's studio. Accordingly, on March 7, 1530, he took with him Alfonso d'Este, Duke of Ferrara, and several princes of his escort, and went to the convent, when being conducted to Fra Damiano's poor cell he knocked at the door. The friar, having opened and allowed the Emperor to enter, shut it quickly. "Stay," said the Emperor, "that is the Duke of Ferrara who follows me." "I know him," answered Fra Damiano, "and that is why I will never let him enter my cell." "And why?" said Charles V., "have you anything of his doing to complain of then?" "Listen, your Majesty," answered the lay brother. "I had to come from Bergamo to Bologna to undertake the work of this choir. I had with me these tools which you see, few in number, but necessary for the work in which it is my study to worthily spend my life and to delight in the art. I had scarcely touched the frontiers of Ferrara when they not only obliged me, a poor friar, to pay a heavy and unjust tax, but the manner of doing it was most offensive. Now, while that



PANELS IN THE SALA DI UDIENZA, COLLEGIO DEL CAMBIO, PERUGIA.—By DOMENICO DEL TASSO.

duke allows such roguery in his State, it is right that he should not be shown this work which you see." Charles smiled, and promised to obtain from Duke Alfonso the amplest satisfaction. Going out of the cell, he told the duke the reason of Fra Damiano's anger, and he not only promised to repay the loss which he had suffered, but conceded a patent to him, by which he and his pupils were for ever free from any tax or duty when crossing the duchy of Ferrara. Then they all came laughing and joking into the cell, and Fra Damiano, to prove to them that his tarsie were not painted with a brush, took a little plane and passed it over a panel with some force, showing how the colours, after that treatment, still retained their integrity and beauty. And then he gave the Emperor a most beautiful piece of the Crucifixion, and another to the Duke of Ferrara, who valued it greatly. Locatelli gives some conversations between Fra Damiano and his assistant Zanetto, which must have preceded this visit, which are worth recording for their racy expression, according well with his reported action: "If it were in my power I would nail up this door for Charles and for all the dukes of the world. This art which I exercise is exceeding dear to me, and I hate to have to do with these signori who manage things after their own fashion; and sad it is for those who have to endure it. I respect his Majesty the Emperor, and hold him to be a great man, but the fate of Rome sticks in my throat. That other, too, who accompanies him—" "Who?" interrupted Zanetto, "the Pope?" "Oh, rubbish—the Pope! The Duke of Ferrara. With him I have a special account, and he must not come here." He also adds the detail that Fra Damiano had no money with him, and had to go about begging for wherewithal to pay the duke's dues till he blushed.

From 1530 to 1534 he worked at a great piece of panelling to be placed in the chapel of the "arca," the tomb of St. Dominic, but now in the Sacristy. This is thought by some to be his masterpiece. In it there are eight cupboards, and on each are eight subjects. In 1534 the Order was so poor that such expenses were stopped, but after seven years it was

recommenced and finished in 1550 by Fra Bernardino and Fra Antonio da Lunigiano, a few months after Fra Damiano's death, which took place on August 30, 1549. The choir consists of a double row of twenty-eight stalls on each side, 112 in all, showing on the right side subjects from the New and on the left from the Old Testaments. Those on the right side are the best, and are probably Fra Damiano's own work. The choir cost 2,809 scudi. The scudo was worth a little more than 10 francs. His reputation crossed the Alps, and Henry II. of France commissioned a little chapel from him with an altarpiece, but the work generally considered his masterpiece is the two-leaved door at the back of the choir of St. Pietro in Casinonse, Perugia. A relative of his, Francesco Zambelli, was responsible for the choir stalls in the cathedral of Genoa, and I quote the conditions of his contract with the procurators, dated April 12, 1540. He agrees to get to work not later than the first of September next, and to stay in the city till the work is done. Nor must he undertake other work under a penalty of 100 scudi, which he is to pay in such a case without demur or defence. The procurators agree to pay for every picture with its frame according to the design furnished him, and they also promise to provide lodgings for himself and his family without any expense to him, and to give him a present when the work is finished. On the same day his relative, Fra Damiano, promises to make two pictures for the seats of the Archbishop and the Doge, to be ready by Christmas next, and to be paid for at the rate of 27 scudi each, measure and design to be given by the Signory. This seems to show that the designer and executant were not one and the same, but on the same day it is recorded that it was explained to the procurators that they would have to pay the expenses of making sketches, which points the other way. Here, as is usual, the arabesques are more successful than the figure subjects. The panels with open cupboard doors are not so well done as Fra Giovanni's. That the designs were sometimes made by artists of reputation is proved by the accounts of the choir of St. Maria Maggiore, Bergamo, the masterpiece of one of Fra Damiano's assistants,

Giovanni Francesco Capo di Ferro, of Lovere, on Lake Iseo. In the archives of the "Misericordia" is a book entitled *Fabbrica Chori*, in which is noted the great expense of the designs only, among which were some made by Lorenzo Lotto, by Alessandro Bonvicino, called Il Moretto, by Andrea Previtali, and half a dozen other artists of less note, as well as the making of models and other similar operations. The total cost for labour alone was 7,000 Imperial lire. Tassi waxes enthusiastic over them, but his great praise proves that the proper limits of the art had been over-stepped in the same way as in the panels in the Colleoni chapel, which much resemble them in treatment. Thus he writes: "These, to speak the truth, for their admirable workmanship, singular art, and beautiful colouring, do not appear to be pieces of wood put together, but rather pictures formed by an excellent brush, the pieces placed with such mastery, and the woods of different colours to form the chiaroscuro so arranged with the darkening of others, that they make the half-tints appear as if really painted with oil by the same Lotto who made the coloured designs, and as he was a celebrated and finished painter and a powerful one, thus certainly these pieces of wood put together could stand in face of paintings by the most celebrated brushes, which, beyond the exactness of drawing, gave to their works singular force and finish; for in them all the possible excellences of drawing and of art are displayed, and whoever has had the opportunity of well considering them has remained surprised and delighted, never believing that human art could reach so high a pitch of perfection."

It is in Italy that the triumphs of the intarsiatori are to be most frequently met with, but the art crossed the Alps, and excellent examples occur in Germany, Holland, England, and France, where, however, it was generally the ornamental rather than the pictorial side which engaged the designers' attention, though architectural and perspective subjects are met with, and even historical compositions. Most of these are of the seventeenth century, and bear the stamp of their period. The designs for important work were generally made by painters, but, of course, at that time the crafts were not so closely specialised as they became at a later date. Cabinets, chests, and other pieces of furniture were more frequently the objects of this form of decoration than "fitments" as years went on, and the Dutch marqueteurs were very successful in the rendering of flowers, the variety of woods made available by Dutch commerce affording great variety of tint and texture. At the beginning of the seventeenth century Colbert engaged two Dutch marqueteurs for the Gobelins, and Jean Macé also learnt the craft by a long stay in Holland.

Very little important work in England is known to be certainly the production of native craftsmen, but the room from Sizergh Castle now at South Kensington may be mentioned which has inlays of holly and bog oak, and the fine suite of furniture at Hardwick Hall, made for Bess of Hardwick by English workmen who had been to Italy for some years. Correspondence passed between her and Sir John Thynne on the subject of the craftsmen employed by both, and there seems no doubt that Longleat and Hardwick were the work of the same men. The inlays upon the long table are particularly fine, and except for a certain clumsiness almost recall the glories of the great period of Italian marquetry. A few other examples are to be found, but in the eighteenth century the decoration of furniture by painting superseded inlay to a great extent.

It was in France that the greatest achievements of the later marqueteurs were produced, which have made French furniture recognised by the public as well as by connoisseurs as an art manufacture, in conjunction with the wonderfully chiselled ormolu mountings. Mention is made of intarsia in France, however, as early as 1416, though it is called marqueterie, and was probably of foreign manufacture. The first man known to have practised the art was Jean Macé of Blois, who was at work in Paris from 1644 or earlier till 1672 as sculptor and painter. He is said to have brought intarsia into France from the Netherlands. His title was "menuisier et faiseur de cabinets et tableaux en marqueterie de bois." He was lodged in the Louvre in 1644 "in honour of the long and fine practice of his art in the Low Countries." His daughter married Pierre Boulle, who in 1619 was turner and joiner to the king. An excellent example of the French design of this period (though it is many years later) is the beautiful panel signed "Follet" in the cabinet by Claude Charles Saunier in the Wallace Collection. Copper and tortoiseshell appear on French cabinets of the period of Louis XIII., and their use was probably imported from Spain or Flanders; it became fashionable about the middle of the seventeenth century, and ended by entirely absorbing the official orders of the Court of Louis XIV. With this work the

name of Boulle is indissolubly associated, though the works produced are of very varied excellence. André Charles Boulle, the third in descent, was a man of most varied talent, and in the decree of Louis XIV. by which he was appointed first art joiner to the King he is called sculptor and engraver. He was a member of the Roman Academy of St. Luke. When his workshops were burnt his collection of drawings and other works of art was valued at 60,000 livres. The number of undeniable productions from his hand is small, but objects which came from the studio after his death are tolerably plentiful, since his four sons carried on the business, though not the inspiration; contemporaries characterised them as "apes." In the Wallace Collection and at the Hotel Cluny genuine examples may be seen. His pupil, J. F. Eben, was especially a marqueteur, and after his death his widow married his foreman, J. H. Riesener, who made the beautiful bureau secretary now in the Wallace Collection for Stanislas Leczinski, King of Poland, dated 1769. He is an example of the profitable nature of his craft, and also of the tricks of fortune. Between 1775 and 1785 he received from the Garde Meuble 500,000 livres, but when he died on January 8, 1806, at the age of seventy-one, he was almost without fortune. From the middle of the eighteenth century Paris has endured a regular invasion of German craftsmen, and the Faubourg St. Antoine still has a number of German-born joiners among its workmen. Among the most celebrated of them was David Roentgen, work from whose hand may be seen at South Kensington. He returned to the old Italian method, "neither burning, nor engraving, nor darkening the shades with smoke," obtaining his effects by the use of many exotic woods. Contemporary opinion thought it difficult to imagine greater success in the particular direction in which he worked. He is another example of the freaks of fortune. His works went all over Europe, from St. Petersburg to Paris, though his workshops were at Neuwied-au-Rhein. He sold to Catherine of Russia a series of articles for 20,000 roubles, and the Empress added a present of 5,000 roubles and a gold snuff-box. The Revolution ruined him, and he was obliged to close his factory. He abandoned France at this period, and the Government, considering him as an *émigré*, seized all his effects, including the furniture made at Neuwied, then in his stores.

In preference to continuing these historical notes to modern times, I will conclude with stating what I consider to be the limitations and capabilities of the art, which will necessarily include much concerning the processes of manufacture. The anecdote of the Emperor Charles V.'s trial of Fra Damiano's tarsia panel in St. Domenico, Bologna, attests the wonderful quality of the work and its success in attaining a doubtful aim, and Barili's inscription in the panel showing himself at work, *Hoc ego antonius Barilus opus calo non penicello excusi*, shows that it was not uncommon for such panels to be supposed to be the work of the brush. The designs from which the intarsia was executed were often furnished by painters of repute, and pictures or portions of pictures were copied, a proceeding which Fra Giovanni's discovery of stains and washes of different colours made easier, until the proper limits of the art were far overpassed and its decorative quality quite lost sight of in the attempt to rival a form of art, the requirements of which were altogether different. The beautiful arabesques which the designers of the early Renaissance poured forth with exhaustless fertility, show the capabilities of the process for decorating flat surfaces, and the perspectives of cupboards and buildings were often most successful without passing the limits imposed by the material.

The question of the limits within which the craftsman's efforts should be confined in any form of art craftsmanship is a thorny one, for the attempt to overstep those limits has always had attractions for the craftsman who is master of his craft, and who sighs for fresh fields to conquer, knowing better than the outsider what are the difficulties which he has overcome successfully in any piece of work from the side of craftsmanship, though often with disastrous results when the matter is regarded from the point of view of excellence in design and purity of taste. It has been maintained by purists in modern times that all engraving or shading of the pieces of wood used in forming the design is illegitimate; and if this be so, it is equally illegitimate to stain any of them; but it is undeniable that a great addition to the resources of the art of the inlayer was made by the discoveries of Fra Giovanni, and it seems unreasonable to refuse to make any use of them because later intarsiatori abused these means of gaining effect.

The earliest work, it is true, depends mainly upon silhouette for its beauty, but does not altogether disdain lines within the main outline, and the abandonment of these inner lines, whether made by graver or saw, so reduces the possibilities of choice of subject as to restrict the designer to a sim-

plicity which is apt to become bald. A great deal may be done by choice of pieces of wood and arrangement of the direction of the lines of the grain. Some of Fra Giovanni's perspectives show very suggestive skies made in this manner, and Fra Damiano was very successful in thus suggesting the texture of much veined and coloured marble and of rocks, but directly the human figure enters into the design these expedients are felt to be insufficient and inexpressive, and inner lines have perforce to be introduced.

The opposite extreme is such work as the panels by the brothers Caniana in the Colleoni chapel at Bergamo, in which the composition and drawing of the figures recall the designs of the Caracci, and the technique of the shading reminds one of a copper plate, while the tinting and gradation of the colours take away all impression of a work in wood, substituting that of a coloured engraving. Here it is quite evident that the desire to imitate pictorial qualities has led the craftsman far away from what should have been his aim, viz., to display the qualities of the material which he was using to the best advantage, consistently with the position and purpose of his work in it. Not that perfection of workmanship is to be decried, though it is only occasionally that one is able to make use of, or indeed produce it. But the æsthetic sense demands that consideration for material and purpose in every production which the joy and pride of the craftsman in overcoming difficulties sometimes prevents him from giving. Notwithstanding the beauty of much of the marquetry of the periods of Louis XIV. and Louis XV., one often feels that design has been put on one side in the endeavour to gain a realistic effect, and the same defect may be traced more clearly in the clumsier Dutch and German productions. Even in the Italian work of an earlier date every now and then the same fault peeps out, though the excellent taste of the nation at that period prevented the Italians from falling into such excesses, and one generally feels the wood even in their most elaborate perspectives.

It may be asserted in a general way that the more colours are used the less likelihood is there of the effect being quite satisfactory, and that any light and shade introduced should be of the simplest kind. A slight darkening of the wood in parts to gain certain suggestion of roundness is quite admissible, but the expedient should be used with discretion, lavish employment of it leading to heaviness of effect and a monotony of tone which are most unpleasing. If ivory or metals are introduced the greatest care is necessary to prevent them from giving a spotty and uneven effect to the design, for neither these two materials nor mother-of-pearl marry quite with the tone of the wood; and this inequality is likely to increase with age, as the wood becomes richer and mellowed in colour. Such materials should be so used that the points where they occur may form a pattern in themselves independently of the rest of the design, so that the effect may be pleasing at first sight, before the meaning of the less prominent details is realised. Any other way of using them courts failure, since the effect of the whole design is ruined by the uncalculated prominence and inequality of these materials here and there. The Dutch sometimes made use of mother-of-pearl, in pieces upon which engraving broke up the hard glitter of the material, mingled with brass-wire and nails or studs driven into the surface of the wood. The two materials appear to be quite harmonious, and small articles decorated in this manner are effective and satisfactory. The Italian use of ivory for the decoration of musical instruments, chess and backgammon boards, and other small objects is nearly always successful, the proportion between wood and ivory being well-judged and the forms of the ornament pleasing.

The modern French marquetry, though exceedingly clever and beautiful in its use of various woods, errs by lack of consideration of the surface to be decorated, the subjects flowing over the surfaces and overflowing the proper boundaries very often; and also sins in using many woods of very slightly differing tones and textures, which will almost certainly lose their reciprocal relation in the course of time, and thereby their decorative effect. The ancient intarsias were made of a small number of different woods, and the effect was kept simple—pear, white poplar, oak, walnut, and holly almost exhaust the list; while even Roentgen's work, in which he used a large number of woods, including some of those foreign trees which Dutch commerce made available for him, has suffered from their changing and fading. I would advise the marqueteur to disregard most of the many foreign woods now in the market, and content himself with simple and well-proved effects for the most part, trusting rather to beauty of design to give distinction to his work than to variety of colour and startling effects of contrast.

It is the fashion at the present day to exhort the designer to found his design upon the study of nature, which is right

enough if accompanied by discretion and a feeling for style. In many mouths, however, the exhortation means that the simple copying of natural forms is advised, and often, if one may judge from the examples which one sees around one, without selection either of subject or form. Now it is obvious that it is sometimes the beauty of form in natural objects which attracts the eye, and sometimes the beauty or strangeness of colours, either in their combination or from the unusual tint; and while the former quality fits the object for translation into ornament, by means of simplification and repetition, the latter is more likely to be the suggestive starting-point for the production of something quite different than a factor in a directly-derived composition. Certain forms of flowers and leaves are also suitable for ornament expressed in a certain way, and when this harmony occurs the direct representation of nature is satisfactory as ornament; but the reverse is very often shown to be the case in work of a more modern type, in which the design is based on the dictum that the copying of natural forms will produce ornament. It is not the copying of natural forms, but the ordering of the spaces, the arranging and balancing of line and mass, and the adaptation of means to ends which produce satisfactory decoration, and in the best Italian intarsias founded upon freely growing, natural plants this is well shown.

In the later French marquetry we often find an equal or almost equal dexterity in expressing the natural form, and an almost greater cleverness in adapting the design to the material; but the Italian work has a fineness of style shown in a grace of arrangement and of proportioning the ornament to the space to be filled, which is unsurpassable.

A cypress chest in the Victoria and Albert Museum, made in 1350, shows a mode of decoration standing between tarsia proper and the mediæval German and French fashion of sinking the ground round the ornament and colouring it. The design is incised, the ground cleared out to a slight depth, and the internal lines of the drawing and the background spaces filled in with a black mastic, the result much resembling niello. If dark wood be substituted for the mastic background we have practically the effect of the stalls of the chapel of the Palazzo Pubblico at Siena, except that the tone of the lighter wood has not the variety which Domenico di Nicolo obtained by the slight differences of colour in the pieces used for draperies and for flesh. The effect of intarsia has also been sought by various imitative processes, some of which are almost indistinguishable from it except by close inspection, the object having been to avoid the difficulty of making the piece cut out and the piece inserted exactly the same size and shape. In one of these wax, either in its natural state or tinted with an addition of powder colour, was used; in another glue mixed with whiting or plaster, also sometimes tinted, or red-lead.

Mr. Heywood Sumner in 1902 described his mode of using the wax process before the Royal Institute of British Architects, as follows:—"First trace the design on the panel of wood to be incised; cut it, either with a V-tool or knife-blade fixed in a tool-handle; clear out the larger spaces with a small gouge, leaving tool-mark roughness in the bottoms for key; when cut, stop the suction of the wood by several coats of white, hard polish. For coloured stoppings, resin (as white as can be got), beeswax, and powdered distemper colour are the three things needful. The melted wax may be run into the incisions by means of a small funnel with handle and gas jet affixed: it is attachable to the nearest gas-burner by indiarubber tubing, so that a regulated heat can be applied to the funnel. When thus attached and heated, pieces of wax of the required inlay colour are dropped into the funnel, and soon there will be a run of melted wax dropping from the end of the funnel-spout, which is easily guided by means of the wooden handle, and thus the entire panel may be inlaid with the melted wax. Superfluous surface wax is cleared off with a broad chisel, so as to make the whole surface flush. If the polish is not applied to the wood the hot wax will enter the grain and stain it, spreading the colour and confusing the design. Incised panels may be filled successfully with japanner's gold size and powdered distemper colour, using a palette knife to distribute the slab mixture. A close grain is the one thing needful in the wood. As to design, that which is best suited may be compared to a broad sort of engraving."

Red-lead was used sometimes, and in the furniture courts at South Kensington there are several chests and other pieces of furniture which have the incised design filled in with a mixture of whiting, glue, and linseed oil. The fine bronze doors which may be seen at Salerno, Amalfi, and other places in South Italy, made at Constantinople, have figures in their panels executed somewhat in this manner, the flesh being filled in with thin silver and the drawing incised, the lines

of drapery, &c., showing a colour generally red. The sacristy cupboards at S. Maria delle Grazie, Milan, called "Lo Scaffale," show paintings by no less an artist than Luini, the ornamental part of which is intended to simulate tarsia, and from a distance does so pretty successfully, though the colour suggests some staining of the wood.

At this time of day I suppose it is very little use to gird at the mechanical modes of producing so-called artistic products, and the average purchaser is just as well pleased to possess an article the design of which in some of its details, if not in all, is to be met with in many other houses, considering the saving in cost from the mechanical reproduction of much of the work to counterbalance the frequent repetition of the design. Although in certain parts of the production of furniture or fittings the use of machinery is quite legitimate and useful, as at the same time saving labour and ensuring accuracy in the fitting of similar portions, in anything pretending to be ornament its use is unwise, for even in such things as ornamented mouldings, in which at first sight one would say that exact repetition is a virtue, it is curious to notice how all the life goes out of the ornament when produced mechanically, and in proportion as the design rises in the scale of importance so does the advisability of each example being unique. It does not offend the eye to see the Gothic ball-flower scattered lavishly along the mouldings, but directly a similar form is carved to represent a human head exact repetition becomes wearisome, the mind demands constant variety. In the same way in fine intarsia the repetition of arabesques with but slight variations of detail does not offend; but if the subject be an arrangement of flower or foliage and an exact repetition occurs, it is noted with surprise, while the perspectives and figure subjects are only pleasing when there is no repetition, each design being unique.

I have now endeavoured to set before you something of the history of intarsia and of the processes employed in its production as far as they affect design: it is this side of the matter which interests me, and I conclude with expressing the hope that I may have succeeded in interesting you also, for I am quite sure that if English artistic manufactures are to regain the place which they held not so many years ago—viz., at the head of the productions of the world—it can only be by giving that attention to appropriate and beautiful design which of late years has been replaced by the following of the will-o'-the-wisp of fashion.

YORK AND YORKSHIRE ARCHITECTURAL SOCIETY.

ON Wednesday, March 22, Mr. W. E. Barry, A.R.I.B.A., of Hull, read a paper on "Garden Suburbs" before the above Society.

He first reviewed the possible effect of the Town Planning Act in the suburbs of our large cities, and drew a contrast between what was being done on the Continent of late years, and what was being done here. Describing the general principles to be borne in mind when any garden suburb scheme is formulated, he said the natural beauties of the site, the trees, hills and hollows should be preserved, and not ruthlessly destroyed as they are in nine cases out of ten; as many roads as possible should run east and west in order to secure to each house its share of sunshine.

Avoid long, straight streets, guard against overcrowding the houses and cottages on the land; abundant open spaces to be reserved for fresh air and recreation, and generally endeavour to bring the quiet life of the country, the trees, and the colour and scent of the flowers within reach of the dweller in town.

Mr. Barry went on to describe a few of the "New Suburbs" now being formed, such as Letchworth, Hampstead, Earswick, and went fully into the detail and planning of the garden suburb at Hull, which had been laid out by him and his partner, Mr. Runtun.

The paper was illustrated by numerous lantern slides, and plans of the different suburbs mentioned by Mr. Barry were arranged in the hall for inspection.

Mr. C. H. Channon, F.R.I.B.A., proposed a vote of thanks, which was seconded by Councillor Dr. Sanderson Long, and supported by Messrs. Burleigh, Scaife and Dyer.

The next meeting will be held on April 19, when a paper will be read by Mr. Harold E. Henderson, on "The Domestic Architecture of The Yorkshire Dales."

The Leeds Education Committee have given notice of their intention to provide a public elementary school for about 150 children in Lidgett Park Road, Roundhay.

ILLUSTRATIONS.

NEW SECONDARY SCHOOL, BLYTH.

A COMPETITION was recently instituted by the Governors of the Blyth Secondary School, and Mr. J. A. Gotch, F.S.A., F.R.I.B.A., was appointed assessor. There were fifty-four designs submitted, and we now illustrate the first premiated design. The chief difficulty in this competition was to provide the whole of the accommodation required for the sum stipulated, viz. 7,000*l.*, plus the 7½ per cent. margin. It was suggested in the conditions that one laboratory and the art room could be omitted to bring the estimate down to the figure mentioned. In the selected design any such omission was not considered, as the estimated cost of the scheme complete was 7,028*l.* The school is to accommodate 280 scholars (with future accommodation for 50), and will be organised in two separate departments—one for boys and one for girls—the intention being to regard the central hall, the laboratories and art room as available for both departments. Subject to this arrangement each department will be entirely independent. The manual instruction room will be outside the main building, and the school dining room and the cookery and laundry room are also outside the main building and connected to the caretaker's house. The scheme which we illustrate shows how the problem has been solved. The school building has been placed in the centre of the Plessy Road frontage, with the manual instruction room at one side, and balanced on the other by the cookery and dining rooms, both connected to the main school building by the respective playsheds, thus connecting the various buildings without providing special cover ways, and at the same time presenting a most interesting elevation to the main road. The caretaker's house has direct access from the main road, convenient for tradesmen, and is arranged so that the service to dining room can be from the kitchen or cookery room as desired.

Excellent supervision has been obtained by placing the headmaster's and headmistress's rooms on the ground floor, and the masters' and mistresses' common rooms on the first floor. The facades have been simply treated with local stock bricks, and the window heads and quoins in dark red bricks. The main cornice is of wood, and the roofs covered with green Westmoreland slates. The architect is Mr. Edward Cratney, of Wallsend and Newcastle-on-Tyne. The assessor in his report says that the hall in this plan has the advantage of not being a thoroughfare room, and that he regards the design as a pleasing and architectural group, the general disposition of the buildings and position on the site being good. The heating and ventilation have been well considered. The elevations are dignified and interesting. If the author's view that the whole could be provided for 7,028*l.* is a trifle sanguine, considering the present state of the building trade, the referee evidently does not regard it as impossible of fulfilment. There is a high average of excellence among the designs submitted, and it was only after a long and careful scrutiny that a conclusion was arrived at in regard to the award of the second and third premiums. Tenders have been obtained, and the cost of erecting the school including all outbuildings, boundary walls, &c., works out at 27*l.* 5*s.* per head.

CORNER CUPBOARD BY J. F. OEBEN.—INTARSIA BY ARMADI IN THE NEW SACRISTY OF FLORENCE CATHEDRAL.

THESE examples of intarsia work are described in the lecture on Intarsia and Wood Inlay by Mr. F. Hamilton Jackson which we report elsewhere.

DRAWINGS FOR PUGIN STUDENTSHIP.

WE reproduce some of the drawings submitted by Mr. J. B. F. Cowper, the winner of the Pugin Studentship 1911. The illustrations were photographed from the actual strainers as an illustration to our younger readers of the manner in which competitors for the Pugin arrange their drawings and sketches.

THE Committee of Visitors for the County Lunatic Asylum at Prestwich, Lancashire, require a quantity surveyor, to take out the quantities for the proposed new infirmary for female patients, in accordance with plans prepared by Mr. Thomas Chadwick, A.R.I.B.A., and to measure up the work at completion. Applications, stating terms and experience, to be sent to the Chairman of the Committee, County Asylum, Prestwich, not later than April 19.

THE ARCHITECTURAL ASSOCIATION.

AT the last ordinary general meeting of the Architectural Association on March 20, a paper was read by Mr. A. M. Brice, entitled "The Legal Authority of the Architect as an Agent." This paper was printed in part in our issue of last week. We now give a report of the remainder, together with the subsequent discussion.

Where the architect exceeds his authority, and the builder, nevertheless, complies with his unauthorised instructions, the building owner can repudiate any claim the builder may make in respect of work done in these circumstances, unless, either expressly or impliedly, he has adopted or ratified such unauthorised instructions; and the only measure of relief then open to the builder is a claim by him against the architect for damages for breach of warranty of authority. One of the principles of the law of agency is that a person, whether acting in good faith or not, who represents to a third party that he is the agent of another when he has no such authority, or represents, when authorised to act as such agent, that his authority is other than it is, warrants such authority, either expressly or impliedly, to that third party, and since his representation is untrue, is committing a breach of such warranty of authority. For such breach, or for the alternative claim, where a builder would bring an action for damages for deceit founded upon a fraudulent assertion of authority, the measure of damages would be about the same, for the measure would be in almost every case the amount which the builder has lost through acting on the faith of the architect's warranty, together with such profit as would have been made, and such expenses as he may have been put to by any action of the building owner in regard to the work done in accordance with the architect's warranty.

For example, where an architect employed to superintend the building of a church, falsely represented that he was authorised by the building owners (a committee) to order stone from a certain firm for the building of the church, and the firm, relying on the representation and believing that the architect had authority from the building owners to order the stone on their account, delivered it, and it was used in the building of the church, and subsequently failed in its action against the building owners, and had to pay the costs of the successful defendant in addition to their own, it was held that the stone merchants were entitled to recover from the architect not only the value of the stone, but also the costs they had incurred and paid in the action against the building owner (*Randell v. Trimen* (1856), 18 C. B. 786). This was an action for deceit, but an action for breach of warranty would lie, and similar damages would be awarded, even though the architect had the *bonâ fide* belief that the authority he warranted was vested in him.

On the other hand, if the builder has notice of the architect's want of authority, then his right of action against both the building owner and the architect disappears. And, at this date, when building contracts are not only almost universally used, but largely become in course of time of a stereotyped character and singularly complete, it has become increasingly difficult for a builder to say that he has had no notice of what the building owner will be responsible for, and no notice of the extent and the limitations of the architect's authority.

Before closing this paper a few words should be added with respect to the architect's capacity to delegate his authority. The old maxims—"Delegata potestas non potest delegari" and "Delegatus non potest delegare"—apply to architects as to others, but it is settled law that, in the case of architects, as indeed in the case of others too, the delegate may employ subordinates to carry out the details of his work. In *Hemming v. Hale* (1859, 7 C. B., N. S. S. 487), *Williams J.* held that, "Where a man employs an agent, relying upon his peculiar aptitude for the work entrusted to him, it is not competent to that person to delegate the trust to another, but where the act to be done is of such a nature that it is perfectly indifferent whether it is done by A or B, and the person originally entrusted remains liable to the principal by whomsoever the thing may be done, the maxim, 'Delegata potestas non potest delegari,' does not apply." And in a much more recent case, that of *Graham v. The Commissioners of Works* (*Builder*, November 15, 1902, p. 456), it was similarly held by the Court of Appeal in circumstances thus described by the Master of the Rolls:—"By the terms of the contract the architect could order the removal of any materials used in the building that appeared to him not up to the specified quality. What the architect actually did was to examine the wood on the ground, and, finding that it was not of the required quality, he directed the clerk of the works to mark the timbers already put in the roof of the sorting house to which he objected. Upon that gentle-

man's report, the architect framed his certificate, and the question was whether in these circumstances the architect could be said to have adjudicated on the matter. It was perfectly obvious as a matter of business that one could not expect an architect to go into every detail himself, and he (the Master of the Rolls) had no hesitation in holding on the authorities that the architect, having himself first ascertained that the timber being used was not of the stipulated quality, was perfectly entitled to delegate the duty of particularising which of the timbers had to be removed." And the Lords Justices concurred in this judgment.

But the architect is not entitled to put unreasonable confidence in any person to whom he may delegate his authority, even though that person be employed by the building owner; and he would be liable in damages to the building owner if, by reason of such unreasonable confidence, he should certify for work which is inferior to the quality required by the contract. For example, where a building owner employed an architect to superintend the rebuilding of a house after a fire, and also appointed and employed the clerk of the works, and the architect, accepting the view of the clerk of the works that certain timbers did not require replacing without himself inspecting such timbers, passed those timbers, it was held by *Cave J.* that the question whether new timbers were required or not was one for the architect and not for the clerk of the works, and that if the architect adopted the view of the clerk of the works without himself inspecting the timbers the responsibility of doing so attached to the architect, who became, in consequence, liable in damages to the building owner (*Lee v. Bateman* (Lord), 1893, *Times*, October 31).

To put it briefly, although the architect may delegate certain duties of a more or less ministerial character, he must not abdicate his position or lay down his responsibility as the authorised agent of the building owner.

MR. WILLIAM WOODWARD, in proposing the vote of thanks, remarked that Mr. Brice's paper had been so carefully prepared, and read in such an incisive form, that it almost made him think that his own ideas of the responsibility of an architect, his duties and his liabilities, had been altogether wrong. The question might be concentrated in this one observation—that the architect is the recognised agent of the building owner. Once that is lost sight of all the dangers foreshadowed in the paper open up. Architects have hitherto gone on the principle that as soon as the contract is signed they are as agents entitled to pledge the credit of the building owner practically to any extent, no matter whether they receive or not the consent of the client to variations in the contract. There may be variations during the construction of the building which do involve extra cost, and yet which are not expressed within the terms of the authority given to the architect. The architect acting as agent to the building owner may employ a sub-contractor to perform work by some such words as "I am authorised by Mr. —, who is the building owner, to instruct you to proceed with — at a cost of —." In order that the building owner may be protected from paying twice for the same work, architects usually make the general contractor enter into a separate contract with the sub-contractor. But in *Crittal v. London County Council* the position was that, notwithstanding that the building owner had paid the general contractor on the certificate of the architect for some specific work executed by the sub-contractor, the building owner was liable to pay once again, as the latter had not been paid by the general contractor. With regard to the implied authority for the employment of a quantity surveyor, Mr. Woodward held that assuming the client desired the competition of tenders, the client was liable for his remuneration whether or not there had been any specific agreement. There were cases where the quantity surveyor had attempted to recover his costs from the architect. In every case in which no such authority had been given the architect was liable to the quantity surveyor. In one part of the paper Mr. Brice had said that in practice appointment by written contract was the usual manner, "but in law it is only necessary in two cases to make such appointment in writing. In the first case, if the work is not to be performed within the year, or is incapable of being completely performed within the year, then, in order to satisfy the Statute of Frauds, the appointment must be in writing." This was, said Mr. Woodward, entirely new to him, and the words were very important. He would like to know whether he was right or wrong in assuming that in the absence of any specific contract between the building owner and the architect, the latter was the acknowledged agent of the owner. If this supposition was right, then the architect was authorised to pledge the credit of the employer to practically any extent in all that related to the construction of the building. If the supposition was

wrong, then all he (the speaker) could say was that he would have to take steps very different to those he had hitherto taken in order to protect his own position. The architect would have no authority to vary the building contract if he was not the agent of the owner. Mr. Woodward said his own practice had been to let the builder make a list of what he had ordered verbally within a week of ordering them, and that list when signed came within the terms of the contract. He had to confess that he sometimes did not know whether there were going to be any extras until the work with all its additions and omissions had been measured up. It should always be remembered that an architect could not delegate his authority to a clerk of works, or relieve himself from responsibility for what the clerk of works did. This had been shown in the recent "dry-rot" case, where the architect was mulcted in heavy damages for alleged negligence.

Mr. H. PHILLIPS FLETCHER said that Mr. Woodward's remarks had emphasised the difficulties architects had to contend with. With regard to the first part of the paper, the question of responsibility depended to his mind entirely on the capacity in which the architect was employed. Mr. Montefiore Brice had almost exclusively dealt with architects as the agent of the building owner. But surely it was better for the architect to be in the position of arbitrator under the contract than merely as agent. That position appeared to him to be more satisfactory to all parties concerned. With regard to *Chambers v. Goldthorpe*, it was there decided that damages were not to be obtained from the architect, because he was acting in such capacity, and was doing his best between the parties. There were some very edifying cases relating to the profession, and amongst them was that of *Dollar v. Higgs*, in which it was held that under certain circumstances a quantity surveyor was the assistant of the architect, and that the architect was entitled to two-thirds of the fees paid for such work. As to *Sharpe v. San Paulo Railway* (to which reference had been made by Mr. Brice), he believed that it was most improbable that any architect would act towards the contractor in the matter of payment for extras as the company's engineer had done. It certainly seemed very, very hard on a contractor that anyone should go back on their verbal undertaking. With regard to the cases cited relating to quantities, there was another way to look at the question, viz., from the position of the contractor. If clients did not feel themselves protected to a certain extent from extras there would be so much nervousness that they would not undertake any building at all. An ordinary client could not afford to give the architect *carte blanche* before commencing the job. Mr. Brice had mentioned that an architect had, when authorised to obtain tenders, an implied authority to engage the services of a quantity surveyor. But unless the architect discloses the name of his principal he becomes financially responsible to the quantity surveyor. Architects should be very careful not to order anything direct from a sub-contractor; as was shown in *Hobbs v. Turner*, this must always be done through the general contractor. The R.I.B.A. form of contract was to his mind some way from being perfect. If architects acted as arbitrators they must do so properly. For example, in *Carmichael v. Stonwood Flooring Co.* it was decided that an inquiry had not been properly held under the Arbitration Act. A most important case was *Trollope v. the Leicester Board of Guardians*, because through it architects might be placed in a very awkward position. In this case a man was appointed as clerk of works by the client, and then entered into a fraudulent arrangement with the builder. As a result of his lack of proper supervision, dry-rot set in, and all the floors which had been laid down had to be taken up again. Under such existing conditions, said Mr. Fletcher, it is impossible for an architect to prevent the contractor and the clerk of works putting their heads together if so minded. It seemed to him that not only the Architectural Association and the Institute, but also the Institute of Civil Engineers and the Surveyors' Institution, as trade unions, should stand together, and if necessary spend their last farthing in defending the position of their members. These professions were absolutely precarious if this decision was allowed to stand. Young architects would find it a good practice when ordering variations on the contract while inspecting the work to jot them down in their note-books, so that a formal order might be forwarded confirming the same on returning to their offices.

Mr. E. MARSLAND said that as architects they had come to the meeting for information. The paper was one that should be filed and kept within handy reference. It enabled them to see what a thorny path they had cut out for themselves as architects. Yet they need not be discouraged, for

in nine cases out of ten everything goes smoothly. An architect can generally pursue his path with equanimity if he prepares his drawings with care, and so on. In a very large number of cases the trouble has arisen because the quantity surveyor has written the specification. But that was the architect's work, and the latter would save a large amount of trouble if he wrote the specification himself.

Mr. A. T. BOLTON said a very large number of architects would save themselves trouble if they used the R.I.B.A. Form of Contract, which had become familiar to builders. He knew of one architect at least who had got into trouble through making up a form of his own. The Institute form gave a good deal of power over the building owner—a side of the question apt to be overlooked. The Institute of Builders have, moreover, approved of it. He would recommend everyone, however, to supplement it by a book of extra order forms; and he thought it a pity such a book was not issued by the Royal Institute, for that simple method gave the architect some idea where he stood. They would find that by taking a small amount of trouble at the time they were saved a lot of work later. One of the most serious questions was that of building materials. The rapid decay of materials nowadays was alarming; and there was always the question of what was reasonable perfection of material. Some materials now began to decay almost as soon as a building was completed. The vindictiveness of some clients was a thing that lawyers did not understand. There ought to be some relation between an architect's responsibility and what he received. There was also the important question of the quality of the work. Given a cantankerous client, it was possible to put an architect in a serious position by disputing that the materials were not the best.

Mr. MORGAN VEITCH (solicitor) remarked that the general public took the view that after all the client paid an architect to supervise the work and protect his interests, arguing if the architect could not devote a sufficient amount of time to his work to see to it properly then he must take the responsibility. The only safe plan seemed to be to set about a job with a determination to keep a vigilant eye on the work. It was always advisable to make sure that the client is aware of the R.I.B.A. scale of charges. The first lesson to be derived from the discussion on the paper was that it is impossible for architects to proceed without a certain amount of legal knowledge; at any rate they should have sufficient to know when a pitfall is being approached, so that they can then go to their legal advisers. A considerable use should certainly be made of the printed R.I.B.A. form; but that was not sufficient, as variations must be made. Having got the building contract drawn up and signed the architect could not be too careful about consulting it from time to time, and about making sure he protected himself if he went outside its four corners by letting the client know. Should a point of law be raised the safest plan is for the architect to offer to state a case.

Mr. E. GREENOP thought that the R.I.B.A. Form of Contract should be used only with great care and after reading up some of the cases mentioned by Mr. Brice. Whatever might be the cause there had been of late years a tendency on the part of clients to become extremely exacting and to make the architect the scapegoat not only for the builder's delinquencies, but also for the mistakes and ignorance of the client himself. Mr. Brice had stated that "the authority of an architect flows from the terms of his appointment as the agent of his employer, and in practice is generally limited (so far, at least, as the relations between the building owner and the builder are concerned) by the terms of the building contract." But the Institute Form of Contract says distinctly that the builders shall vary the contract as instructed by the architect. The whole legal difficulty arose out of the fact that lawyers will insist on applying ordinary contract law to technical questions. The case of *Robins v. Goddard* showed that architects are not arbitrators at all, but mere mouthpieces of the client. America and Canada have a most excellent description of an architect's duties and responsibilities prefacing their scale of charges.

Mr. GERALD C. HORSLEY (the Chairman), in closing the discussion, said he did not think that they as architects need be discouraged by hearing of the pains and penalties they seemed to be liable for. If they were well equipped for their work as architects, if they had obtained the confidence of their clients in the preliminary interviews with them, he thought they might rely upon a fairly safe voyage through the work undertaken. There were undoubtedly many pitfalls and difficulties on that journey, but they need not be very much afraid.

The vote of thanks was then put to the meeting and carried by acclamation.

Mr. A. M. BRICE then briefly replied to the points raised, and the meeting closed.

THE RELATION OF SCULPTURE AND CARVED ORNAMENT TO ARCHITECTURE.*

THE discussion of the relation of sculpture and carved ornament to architecture is necessarily directed mainly to that interesting series of instances where the art of form finds its fullest expression through the harmonious co-operation of both its branches: for though sculpture and architecture may each have their own definite sphere, and are in that sense independent of the other, it is when acting together in harmony that each is recognised as attaining to its highest achievements.

These periods illustrate that architecture and sculpture being phases of one art, their excellence is largely interchangeable and that when working in entire sympathy and understanding, the art of form is effectively presented, because it is then presented in its entirety.

The Egyptian, the Assyrian, the Greek, the Roman, the Gothic, the Renaissance periods are all distinguished by the presence of an adequate sculpture, in sympathy with the æsthetic theme of architecture, much in the same way as a song and its accompaniment. It is suggested that all art is one, and therefore the architect, sculptor, and painter should be united in one person.

There are so few instances, however, of this being done with success, that these instances constitute exceptions rather than rules, and judging by the amount a sculptor has positively to learn, and the difference of standpoint his phase of art demands, there is in my opinion little probability of the artist in either branch really possessing more than a smattering of knowledge in the allied arts.

The early use of sculpture would appear not to differ essentially from the present, viz., assisting to realise an object, or event, a person or an abstract idea; and it still appeals as having qualities which give it predominance as a nucleus around which the associations and memories of a person or event may congregate.

Ruskin states that to make things in real volume is a primary human instinct, and cites the case of a child making a cat and kittens in dough in support of this theory. I propose by passing in review various examples with the aid of the lantern slides to make clear the main points of the subject. The subjects of the Egyptian sculpture were historical records of the kings and their achievements, the representations of their various deities; and there are some very interesting and realistic portraits of priests and other people of importance. Most of these minor works are in wood but their treatment is similar in character to the granite work, and perhaps for this reason suggests their being thought out in granite.

The Assyrian works are much the same in subject, the records and doings of the kings, their deities, and their sports. Those depicting lion hunting are of exceptional vigour in treatment and expression, as might be expected of a sport-loving people.

Of the Greek, the sculpture was mainly devoted to the service of religion, and as the worship of beauty formed a not inconsiderable part we find this reflected in the humanising of their deities, and the effort to represent these of the highest physical development, beauty, and dignity: an effort which eventually developed that magnificent school of sculpture which is still the wonder and the admiration of the world.

Although Rome continued much the same theology, the impulse of the people being different, the real seems to have had more charm than the ideal; and we find a development of portraiture, and a careful rendering of detail: the things which are matter rather than the things which might be. We get an actual Hadrian in his statue, and it is a fine statue. We find also a development of the minor forms of sculpture; foliated ornament especially gained in importance.

Greek carved ornament was much more restrained and seems designed rather for effects of light, and of conveying through its texture, the effect of lace-like enrichment on a solid structure: while the Roman is distinguished by vigour and boldness of design, the capitals of the Pantheon which I take as typical of Roman ornament have remained the dominant type in use for palatial buildings to the present day.

* A paper read by Mr. W. S. Frith before the Society of Architects, on Thursday, March 9.

Generally, Roman sculpture conveys the impression of being used rather for its decorative value as an adjunct to luxury rather than, as in the Greek, for the love of art and delight found in seeking for its higher development. The break up of the Roman Empire coinciding with the change of faith, and that faith one in which the ancient sculpture was considered idolatrous, together with vast social disturbances, brought about the disappearance of the architecture and sculpture identified with ancient Rome. After an interval we have the rise of the Byzantine order in which while sculpture served to record one persons and the incidents of the faith, this was effected in a way rather symbolical than personal, and in architecture its principal use was to assist to produce pattern, texture and rhythm, of the general composition. The statues from Chartres Cathedral are a good instance of this, as also is the portal of Rheims, which though of later date carries on the same traditions, and as an example of design must be considered a masterpiece. This system of using sculpture affords considerable opportunity for the introduction of a variety of scales in the figures, a device not exclusively Gothic, but of which considerable use is made in all its varieties. The harmonious contrast of broad surface with broken surface, of lines with fret, and curved with straight line, while preserving the general structural idea, is one which provided the artists with material for some centuries.

The many examples the various cathedrals afford are well worthy of long and continued study, and it is the conviction of all who have been interested in the Gothic phase of the art, that it is not only what has been done that is of interest, but they feel that there is here a mine of knowledge and suggestion capable of immense future development.

The Percy Tomb is a fine example of English work under this general influence; the way in which the whole weaves together, the arrangement whereby the structural idea carries through and is borne out by the foliated and moulded enrichment, and the way in which the composition is varied and completed by the figures, together with the grand treatment of the foliated enrichment is worthy of all praise.

The revival of classic learning in Italy, and the revival of classic art which followed it, cut short the independent development of Gothic, but not without there being effort to blend the two, as in the art of Northern France, and in that called the style of Francis I.; the jubé de Limoges must be taken as a sufficient example.

With reference to the art of Italy, I think it may be said that Italian artists never took kindly to the Gothic idea of the human figure represented merely as a symbol (as it were a letter in the alphabet); but in even their early work felt and represented the strivings of the individualistic spirit within; although the work of Nicolo Pisano and his school approximated to the texture scheme of the Gothic sculptors, there is yet a feeling for form and movement which differs from these, and in the work of Ghiberti, Donatello, Verrocchio, Lucca della Robbia, Rossellino, and many more, and above all, Michel Angelo, the details become lost in the grand effort to realise to the fullest the conception of the mighty spirit moving in the divinely formed body; the work arriving at a stage when it is its emotional aspect rather than its architectural that enforces attention.

As our subject is, however, sculpture in relation to architecture, and having viewed a number of illustrations, it may be well to consider the question of general principles; for in reviewing these various works, we seem to need a guide to consecutive thought, other than that supplied by the purely historical aspect.

Yet, in approaching this, the question at once arises as to who shall define art, for the spirit of art is as intangible as a dream—may be it is a dream—of which may be said in the words of Shelley:—

"On an unimagined shore,
Under the grey beak of some promontory,
She met me in such exceeding glory
That I saw her not."—*Epipsychidion*.

Though the spirit of art is indefinable and may be considered as a vision apprehended not by any means by the eye alone, the efforts to realise this vision, which result in works of art, are found to conform to certain general rules: with reference to which in reading a musical book lately, I found a definition of the qualities a work in that form of art should possess, which seem to me to the point; it commenced by saying form, expression, feeling, and variety were essential. *Form*, the shape presented to the mind; *expression*, the prominence given to some sounds and the subordination of others; *feeling*, the character of the effect

produced; and variety, to prevent the work becoming mechanical and so lifeless. It further states a melody should display amidst all its features and phases an all-pervading unity and relationship among its several parts.

The text then proceeds in criticism of a certain arrangement, as wanting in design in its form, regularity in its expression, stability, or clearness in its feeling, and method in its variety.

These directions seem so admirably adapted to the art of the sculptor and carver, that they might well have been written expressly for him, except that being written about musical composition they make no mention of the artist's hand.

I do not suggest that the musical world in any way overlooks this, the human executant element, but that in the graphic and plastic arts it necessarily occupies a very important place indeed.

In examples from the Certosa at Pavia, I think it can be claimed that the all-pervading unity and relationship is preserved, and that the less important elements are treated with due subordination, that the varied textures and minor ornamentation are treated in an interesting and able way indicating great ability in design and very skilful execution. Much the same as to general design and importance given to some and the subordination of other portions can be said of the altar from Vicenza.

I think, however, that in the two doorways from Como we find a more marked distinction in design; the artist seems to be possessed of a more varied palette, the rhythm is felt throbbing more harmoniously throughout, and there seems more room left for the imagination to play in. And here, it may be remarked that a work may be so obviously finished, that no point arising to call for comment, we simply pass it by and are much more interested in the less complete. I think this brings us to the question of variety.

Lord Bacon in one of his essays remarks: "There is no beauty but hath some quality of strangeness in it." I think it may also be said that we do not recognise beauty in that which is altogether strange, and it is the *just proportion* of strangeness harmonised with that which is *familiar*, which constitutes the charm.

How is this charm of the familiar and the new to be obtained? By a search through the realms of nature, by developing a helpful imagination, and by acquiring the power to imitate, together with the power to invent, and to express or rather to reveal your discoveries with a skilful hand. Imitation alone is not sufficient, it must be balanced and controlled; in the Gothic period the direct imitation of leaves as in Early Decorated, soon ceased to satisfy, and developed into the more rhythmical Perpendicular.

In the Renaissance period, the most satisfactory arrangement of ornament was found to be (where direct imitation was used at all) to obtain the necessary architectural quality by a considerable dominance of conventional form, and this occurs even in the extremely free treatment of Grinling Gibbons.

The principles applying to the figure are not identical with those of ornament, but in the Greek work I think the contention that the earlier and less realistic work is the best fitted for architectural purposes can well be maintained.

And in the Gothic period the unity of the whole could not have been preserved except the sculptors' convention permitted the lights and shadows to be of the right size and shape and to occur in the right place, three things of which imitation can take no heed.

On this question of harmonistic treatment which really embraces the question of distance effect also, M. Camille Maclair writes in his work on Rodin: "This theory to which Rodin approved of my giving the name of *deliberate amplification of surfaces* is simply the critical principle of Greek sculpture, which has been entirely misunderstood by the Academic School. That school, which is supposed to honour the Greeks, is really false to their spirit, and their teaching. Moreover, this principle which belongs to all primitive statuary that was made for the open air is to be found among the Egyptian and the Assyrian. It calls in question the academic tradition, whereby exactitude is confounded with truth." This deliberate arrangement of surfaces is well borne out in the examples that have been shown this evening, and the Wellington Memorial, probably the finest monument in existence, is a further example of great care devoted to the arrangement, design, and treatment of light and shade-bearing surfaces, practically coinciding with the Rodin view.

In the Michel Angelo example it will also be found that the dominant feature is the light-bearing surface finely defined by the broad grouping and design of the shadows,

and, indeed, this may be accepted as one of the most important elements in the means of expression of the art.

This may be considered as rather appertaining to the craftsmanship; of course, craftsmanship is, after all, only the servant, something more is required in a work of art, something on which the human mind can work; for in all real art it is essential that underlying the mere representation the working of the directing mind and the touch of the executing hand should be evident. In certain work the skill of the hand is alone sufficient to justify the work; in the Roman stuccoes, for instance, how great a charm is imparted by the hand traces left upon them.

In the work of Rodin, how much does it owe to the same cause; and in the work of Michel Angelo, how do those parts so called unfinished yield traces of his consummately skilful hand moving as directed by his mighty brain? It brings the thing home to us and seems to place us in immediate touch with the artist working at those grand conceptions which for four hundred years have filled so large a space in the history and development of art; and, to use a hackneyed phrase, which expresses nevertheless a profound truth, supplies the "touch of nature that makes the whole world kin."

THE ILLUMINATING ENGINEERING SOCIETY.

THE LIGHTING OF SCHOOLS.

AT the meeting of this Society on February 16 the following paper was contributed by Mr. Bishop Harman, and read in his absence by Mr. J. S. Dow, the assistant Hon. Secretary:—

The artificial lighting of school buildings has only recently forced itself upon the attention of school authorities and lighting experts. Until quite recently, within the life of the youngest here present, the use of artificial light in school hours was a rare incident, and one that afforded not a little interest to the pupils. The occasional fog was a joke, and the lighting of the gas a thing we coveted to take a hand in, whilst the ruddy glow and the roar of the flame that spurted from the long black arm of the gaspipe made the dull old class-rooms seem jovial.

The old time, happy-go-lucky school is gone; efficiency in work and appliance, economy of time and expenditure is the order of the day. With the extraordinary improvement in school building that has marked the last thirty years, and particularly the ever extending uses of school buildings for evening classes, a demand for satisfactory artificial lighting has arisen; and the rapid advances in methods of illumination give ample opportunity for satisfying the demand. It remains for us to critically examine the necessities of the schools on the one hand and the best means of arranging our available illuminants on the other. And we must always bear in mind that at our elbow is a trio of keen critics of our efforts—the educationalist watching the light; the school keeper grumbling at the botheration of upkeep; and the ratepayer incessantly protesting at expenditure.

In the course of this paper, which is based on experimental work performed for the most part in London County Council Schools at the instance of Dr. James Kerr, I shall hope to succeed in showing you that the plan upon which any scheme of lighting must be laid out is really quite simple, and that it is the same for all kinds of illuminants, whether oil, gas, or electricity. Difficulties will arise only in so far as the actual structural conditions of rooms are irregular, or the illuminant at our disposal is lacking in flexibility.

Photometry.—One necessity of our work is a simple, accurate, and portable photometer; the methods of the laboratory, the comparison of shadows, or Bunsen's grease spot method, are not suitable for the examination of desk lighting. A photometer that has been in use in London schools for several years is that of Wingen. It consists of a metal box, 8 in. by 6.5 in. by 4 in., within which, near one end, is placed a benzine lamp, the wick of which can be raised or lowered at pleasure. Outside the box is a small shelf covered with a white card upon which falls the rays of light to be examined. Inside the box is a similar white card lighted by the benzine lamp. The two white cards are viewed simultaneously at the bottom of a tube glazed with red glass, whilst the wick of the benzine lamp is adjusted till the cards appear equally brilliantly lighted. The value of the illumination is read off by looking through a small slit in the side of the box; a mark on the glass covering this slit is taken as a "backsight," the top of the

flame as a "foresight," and the figure on the scale fixed on the side of the box beyond the flame that is found to be in a line with the "back" and "fore" sights gives the value of the illumination in metre-candles. Before commencing to work with this photometer I took it to one of the London County Council gas-testing stations, and by the courtesy of the expert in charge, and with his aid, tested the instrument against the standard pentane lamp. The instrument was found to be correct for the purpose required, and the calibration which extends from 10 to 50 metre-candles was further extended to 1 metre-candle.

If I might venture a criticism on this useful instrument, I would suggest that the principal difficulty found in its use lies in determining *what is the top of the flame* from which the measurement has to be taken. The shape of the flame varies greatly according to the extent of wick exposed; there is no difficulty when the wick is low and the flame small, but the difficulty is great when the wick is high and a long smoky flame is produced. I should greatly like to see the instrument modified in the following direction: A constant height of flame should be used, the wick should be turned up until it gives a clear smooth topped flame which shall reach a given height to be measured by sighting against marks on the near and far side of the box. Then the variation in the illumination of the white card within the box should be produced by moving the flame nearer or further from the card by a rack or pinion, and the value of the illumination would then be easily read off on a scale fixed to the rack-work. I have tried this construction in a rough model and find it works very well.

Table of results obtained with "Simplex" burner and "C" incandescent mantles, with and without shades. Figures are metre-candles.

Shade.	Perpendicularly below burner.	1 yard.	2 yards.	3 yards.	4 yards.	5 yards.
Name ...	<1	2	2	+1	1	1
"Squat" Calypso	...	6 to 7	8	5	2	1
New No. 3"	...	6 to 7	8	5	2	1
Reflex"	8	8	5	2	1
0 deg. shade-globe	...	22	15	7	2	1

Minimum Desk Illumination.—The possibility of distinguishing one object from another by sight depends primarily on the illumination of the object and its surroundings. A finger mark on a sheet of white paper is easily recognisable in good daylight, but not easy of recognition by candle light. The same principle holds good for distinguishing print on paper. Secondly, the power of distinguishing any given object depends upon the familiarity of the examiner with the object examined. A normal sighted person of middle age will distinguish characters on paper at a poor light with greater readiness than a small child, because the characters are more familiar to the adult. Conversely a child requires a better light to learn to read than does an adult to whom reading is second nature. A standard of illumination is no new idea. Sir Henry Halford is reported to have counselled a patient: "If you wish to reserve your eyes never read by candle light anything smaller than the ace of clubs." From a number of experiments the least possible illumination permissible on the school desk of a child has been found to be equal to ten metre-candles. This may seem a large amount of light if ten wax candles tied in a chandelier and their effect in a room is considered, but it is not large when compared with ordinary daylight in a fairly lighted room. In my consulting room at Harley Street, on a day when the sky is dull and there is not a ray of sunlight, I find the value of the light on my desk, placed fourteen feet from the windows, to equal 160 m.c.; and even at a distance of twenty-four feet the illumination was equal to thirty m.c. On this experience ten m.c. seems a most modest demand for a minimal desk illumination on each school desk.

Oil Lighting.—Except for the use of country schools oil has vanished from the class-rooms. In what are known in official educational circles as "single school areas" oil could seem to have a long life before it. And I think it will continue to be used. Lamps fitted with the central draught spreader burner are cheap to provide, simple in upkeep, and highly efficient. From a long and personal experience of these lamps in my college rooms at Cambridge, and in my private lecture-room at the same place, I am assured that these lamps will have few if any competitors in the absence of communal systems of lighting such as we enjoy in towns. I put this opinion forward in the full

knowledge of the excellence of the modern petrol gas plant and the acetylene-gas generator. In these we have most excellent systems of lighting country houses where there are attendants with reasonable leisure and skill, and an interested superman. But their application is more limited in the case of village schools, by reason of their cost of introduction and working, the necessity for skill and knowledge in working the plant; these will be beyond the pockets of the smaller communities and the ability of the village school caretaker. Moreover, village schools are better off than town schools in the matter of daylight, their buildings need not be overshadowed by houses, their fogs are fewer, their windows and walls keep cleaner, and lastly their curriculum should be arranged so that in day schools close work should cease with the failing of the natural light.

There are points in which the use of oil lamps can be amended first in the provision of better reflectors, secondly in the distribution of the lamps; both of these will be dealt with later on. Before considering the rival claims of other illuminants in the school world I should like to put in by way of parenthesis that I am not, so far as I know, in any way personally interested in any illuminating systems or companies, and that anything I may say for or against any particular mode of lighting is quite unprejudiced as it is given to a man's judgment to be.

Gas.—Most of the London County Council schools are lighted by gas burned directly as an illuminant at the jets of fishtail or batwing burners, or used as a source of heat to render Welsbach mantles incandescent. The naked jet is fast vanishing, but it is of interest to give you the comparative experiments of illuminating effects of naked gas jets and of incandescent mantles performed in an actual class-room. A convenient infant class-room hung with four points of gas was fitted first with the most approved form of naked burner, Bray's No. 4, with No. 6 regulator slipped over it. The double burner gave a steady bright flame, there was no flaring. The desk illumination was then measured and charted. Then these burners were replaced by Welsbach

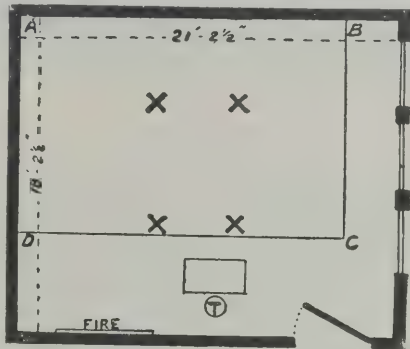


FIG. 1.—The Plan of an infants' class-room with the existing lighting. A B C D, desk area. X X X X, points of light. T, Teacher.

"C" burners and mantles, with "Calypso" shades. Although the gas consumed with the Welsbach burners was no more, perhaps less, than that burned with the fishtail burners, the desk illumination was increased nearly three-fold over the whole room. The desk area measured 179 square feet. With naked jets the minimal illumination obtained over twenty-six square feet only, and then only when no obstruction, such as bodies and hands of children, came between the lights and the desks. With

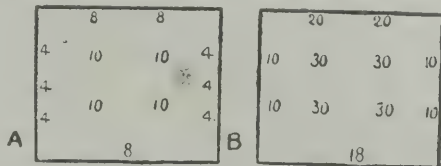
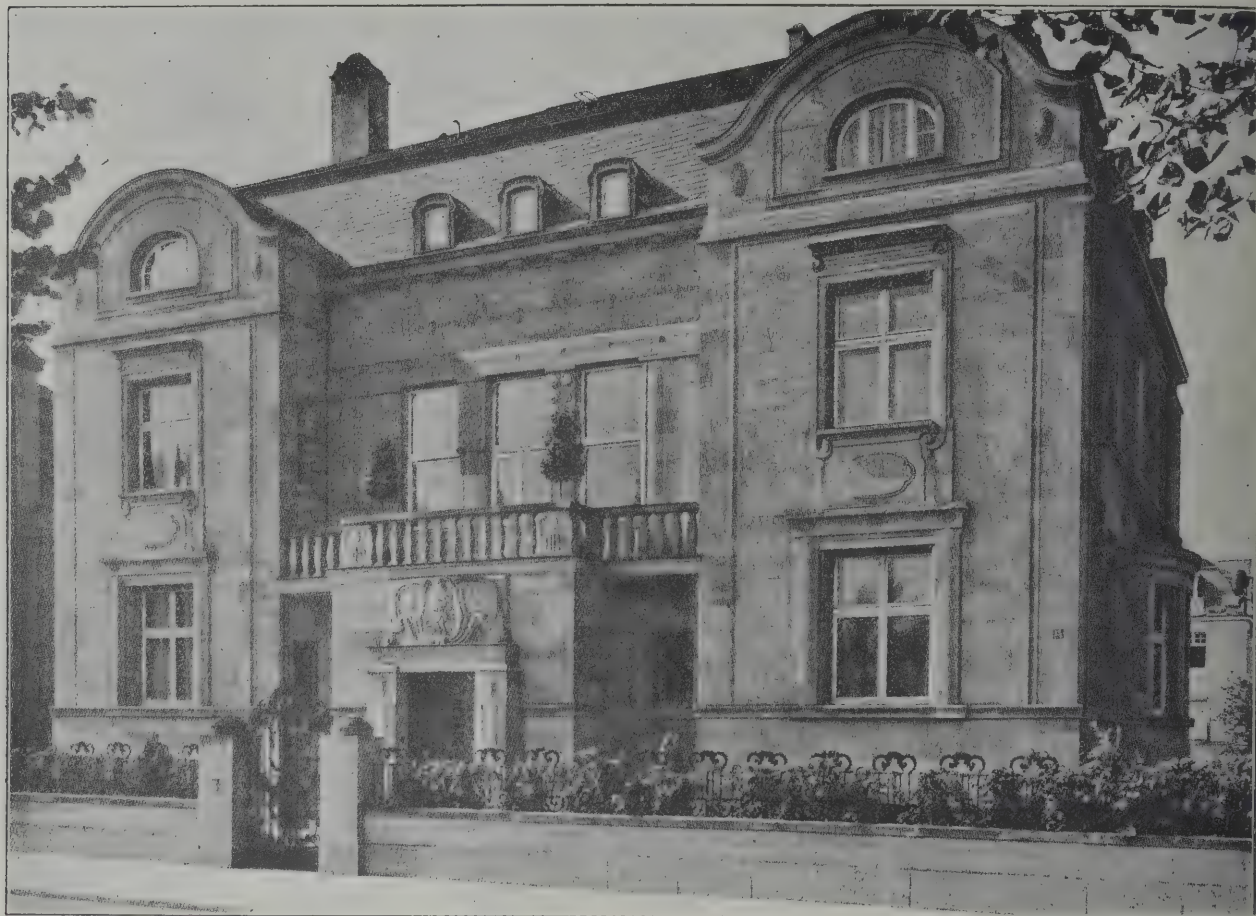


FIG. 2.—The metre-candle light distribution in foregoing room. A, with naked gas jets (Bray's No. 4 with No. 6 regulator). B, with incandescent gas mantle (Welsbach "C" burner, Calypso shade).

the Welsbachs, in no part of the desk area did the illumination fall below ten m.c., whilst in most parts of the room there was an ample margin for the interference which bodies and hands make with the light. Then the incandescent light has the great advantages of purity of colour, absence of flicker, and reduction of smoke. This room in which the experiment was made is not cited as an illustration of good lighting; on the contrary, it is bad when lighted with naked gas jets since the light is insufficient, and bad with the Welsbach because the lights are badly placed.

Incandescent Gas Burners.—Granting the superiority of

MODERN EUROPEAN ARCHITECTURE.
GERMANY.[From *Moderne Bauformen*.

STREET FRONT OF VILLA AT MANNHEIM.—PROFESSOR HERMANN BILLING, ARCHITECT.

the incandescent mantle how can it best be employed in schools, in the upright or inverted form? The one sole advantage of the inverted burner is the absence of shadow below the light, and the correlated ease of securing good reflection, but I shall hope to show you that these desiderata can be quite easily obtained with the upright burner. Against the upright burner we have these counts; greater cost, more care in upkeep, greater sensitiveness to variations of pressure and vibration; and, what I deem an important point, a greater volume of products of combustion. I scarcely think it is necessary to argue these points against the inverted burner, for I hope to be able to show that the one good point of this burner can also be secured with a proper usage of the upright burner. Putting the converse I shall hope to show that the one drawback of the incandescent upright burner, the shadow beneath the burner, can be easily overcome. I may note in passing that inverted burners have been used in schools within my observation, and did not prove so satisfactory in the average school-keepers' hands.

On the particular kinds of upright burner little need be said, but I should like to put in a protest against the excessive liberality of the brass worker in loading the burner with metal; it adds to the cost of the burner (perhaps the maker does not always mind that!), and it is objectionable for another reason, we want the light as near the desk as necessary head room will permit; the waste brass work prevents this.

Shades and Reflectors.—These are most important parts of the equipment. Without a good reflector a Welsbach light is worse than a naked jet, because the brass work of the burner casts a black shadow beneath the light. By reflection from a shade the light can be so distributed as to be practically perfect. For school use the shade must needs be cheap and durable. It should reflect the light so that there is no shadow beneath the burner. It should also reflect the light so that the lamp at a given distance will efficiently cover a given area. Lastly, the shade should protect the teachers' eyes from the direct glare of an exposed mantle.

During my experiments four varieties of shade were found in use: "Squat," "Calypso," "New No. 3," and "Reflex." The inadequacy of the "Squat" as a reflector is

obvious; the sides subtend an angle of thirty to thirty-five degrees, and do not reflect light past the massive brass burner, consequently there is always a large dark blot immediately beneath the light. The "Calypso" has something of a parabolic shape, so that in its use the opaque mass of the burner is even more effective in stopping the direct downward rays. "New No. 3" differs only from the "Calypso" in the shape of the lower clear glass portion, which is immaterial. The "Reflex" is an attempt in the right direction, for the opal reflecting sides of the globe subtend practically a right angle, *i.e.*, the proper angle for downward reflection. The effect of the proper reflecting angle of the "Reflex" is evident when a sheet of white paper is held beneath the burner, for there is only a small shadow cast by the burner. But the "Reflex" is bad for school-room use for two reasons: the upper opal half of the shade ($2\frac{3}{4}$ in. vertical) is of opal glass, the lower half ($2\frac{1}{2}$ in. vertical) is clear glass. So that nearly the whole length of the incandescent mantle is exposed to the eyes of every one in the room, and rays that project laterally from the sides of the mantle are not turned downwards, but lost on the walls of the room.

In the following experiments a comparison was made of the unscreened incandescent mantle, the various shades in use in the schools, and a shade, the opal sides of which subtended an angle of ninety degrees, and the lower margin of the opal reached the lowest level of the luminous mantle. The relative values of these shades in producing effective illumination was obtained by measuring the metre-candle illumination on the desks immediately below the burner and then at intervals of a yard along the horizontal desk tops, which were five feet vertically below the burner. All the shades were examined in the same room and with the same burner and mantle and on the same evening. The results were reported on subsequent occasions. The improvement on the unreflected light by the use of any shade is great, but the results to be obtained by the use of what I will call the ninety degree shade globe are most striking. The gain is obtained by turning down rays that would otherwise be dissipated upon the upper part of the walls of the room; further there is an invaluable gain, the teacher's and children's

MODERN EUROPEAN ARCHITECTURE.
GERMANY.

GARDEN FRONT OF VILLA AT MANNHEIM.—Professor HERMANN BILLING, Architect. [From *Moderne Bauformen*.]

eyes are screened from the dazzling effect of the naked mantle. The general wall illumination of the room did not suffer, it was quite as good as when the "Squat" was used, and although not so bright as with the "Reflex," yet, owing to the absence of the dazzling effect of the exposed mantle, it appears better. The shadow beneath the burner can be estimated by the simple test of holding a large sheet of white paper below the burner. When no shade is used, a sheet of paper held a yard below the burner shows a deep shadow more than a yard in diameter; with the "Squat" or "New No. 3," deep circular shadows about two feet diameter are cast. The "Calypso" throws a small central blot with a secondary outer ring of darkness. With the ninety degree shade globe, as devised, no shade could be detected, even when the screen was held up to within a few inches of the burner. This ninety degree shade globe fulfils all the four conditions required for a school globe, and could be made without any difficulty or any material increase in cost as compared with those now in use.

Subsequent to these experiments I marked out the details of such a shade-globe, and it has been made by the Welsbach Company and proved most satisfactory. It is no larger or heavier than ordinary shades, and costs scarcely any more.

During the last year or two a compromise (on the score of cheapness) on this shade has been largely used in the schools. The sides of this shade subtend an angle of sixty-five degrees, and the opal extends to the level of the flat plain glass bottom plate. The reflection is very nearly as effective as with the ninety degree shade-globe, and there is a complete absence of shadow cast by the burner.

Pendants.—Two kinds of pendants are now in use, a "two light" and a "harp shaped." The former is the ordinary \perp shaped pendant, with a light at the extremity of each arm. The "harp shaped" is a single light pendant, formed by a perpendicular length of tube suspending an elongated elliptical shaped loop. Since all rooms are not the same size, the two-armed pendant is not fitted for general use. With a properly devised "harp shape," the lights can

be placed individually where most wanted. For such a pendant there is the usual ceiling plate, ball and socket joint, and a variable length of tubing to suit the height of the room. The loop should be triangular in shape—one side to carry the gas, the other side should be merely a support to balance the shade. The stop-cock on the gas side should be on the band, and quite clear of the bottom tube. The burner should screw clear on to the bottom tube, without any wasted room filled in with needless brasswork. Attention to these small practical points will save several inches in the distance of the lights from the desks, and improve the effective illumination materially.

Arrangement of Lights.—In this matter one of our greatest reforms can be worked. Until now it would seem that the position of the pendants in the class-rooms has been set rather with a view to symmetry than to good lighting. There is often waste of light in some parts, and poor light in other parts of the rooms. It is difficult to lay down definite rules, as each class-room has to be considered by itself. But the following four points indicate the plan upon which points of light should be set out.

(i.) Each class-room should be considered as being made up of two portions (1) the children's area; (2) the teachers' area. The lighting of these parts must be arranged independently.

(ii.) In the children's part left hand lighting must be arranged for as far as possible, exactly as in the rules for window lighting.

(iii.) In calculating the area over which the rays of a lamp will extend, we must only take into our valuation those rays which proceed from lamps in front of the class to the back of the class. Lamps in front of a class illuminate to some degree the desks of the back row, but lamps to the back of the class do not help to illuminate the front rows of desks when the children are in their places.

(iv.) There must be a clearance of six feet six inches beneath pendants, and the luminous mantle must be as closely as possible approximated to this level, hence burners must

be short and cocks or bye-pass fittings must be placed on one side of the pendant arms, and not between burner and pendant.

From suggestions (ii.) and (iii.) it will follow that the main desk lighting will be arranged to come from the left and somewhat in front of the child. The gasfitter should mark the position of the first lamp to be hung over the centre of the first dual desk on the child's left of the front row. Proceeding, lamp positions should be marked out along this front row at from six feet to nine feet intervals, according to the height of the desks from the floor; being closer in infants and further apart in the higher standards. The row of lamps thus marked out would give sufficient light for the front row and the second row of desks. A second row of lamps similarly spaced would light the third and fourth rows of desks. Since a lamp hung behind a child throws no light on the desk of that child, it follows that the space between the lamps from front to back of a room should be less than that between the lamps from side to side of the room.

In fig. 3 the plan of a model room is given to accommodate forty children. The children occupy two-thirds of the floor space and the lamps for this area may be hung so as to give efficient lighting in two ways, according as to whether infants or older scholars are to occupy the room. For infants the perpendicular distance from lamp to desk must be calculated as five feet. Three lamps will be required in

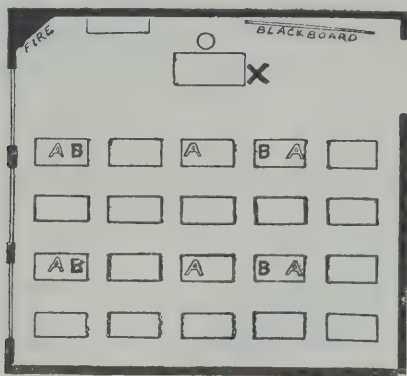


FIG. 3.

the front row and three over the front row in positions marked A.A.A. For a room with well-grown children we need only reckon four feet as the perpendicular distance from lamp to desk, and with this shortened distance the power of the lamps is improved by one-third, so that two lamps over the first and two over the third rows of desks in positions marked B.B. would be sufficient.

The illumination of the teachers' portion of the classroom must be taken separately. Here are hung maps, charts, and the blackboard. Blackboards or slates should be fixed against the wall with the right hand slightly tilted forward, as shown in sketch. They should always occupy the right hand half of the wall behind the teacher. For illumination, when daylight fails, a pendant should be hung to the left of the teacher's desk in the portion marked X; this light should be fitted with a chimney and a metal shell-shaped reflector, opaque to light, to project the light well on to the blackboard or master's desk as required, and to present a dark back to the children.

Electric Lighting.—Handiness, simplicity, and ease of distributing points of light, complete absence of shadows below the lamp, the possibility of perfect reflection, healthiness in freedom from consumption of air, and noiselessness, make lighting by the electric glow-lamp one of the most perfect means now available for school use.

(To be continued.)

OUR CONTEMPORARIES FROM OVERSEAS.

THE American Architect (New York) has illustrated a series of houses in Pennsylvania by Messrs. Mellor & Meigs, which have a refreshing note of stately simplicity. There is also a very useful series of modern schools, accompanied by detail as well as general drawings.

Arkitektur og Dekorativ Kunst (Christiania) shows us what the latest ideas of Norwegian architects in school-planning are like in a series of premiated drawings, with the report of the jury, in a competition for an elementary school at Drammen.

La Construction Moderne (Paris) has an interesting article with illustrations on the Pont Neuf, Paris, and gives also

the drawings for a boys' school at Noisy-le-Sec. Photographs are reproduced of a model showing the "restoration" of Diocletian's Palace at Spalato, executed under the direction of M. Ernest Hébrard.

Construction (Toronto) has devoted practically the whole of its latest issue to concrete; reinforced, hollow block, and artificial stone, with a discussion of its advantages and limitations as a building material, illustrated by examples of its application in Canada and the United States, amongst which are included illustrations of the Marlborough-Blenheim Hotel, Atlantic City, New Jersey, which is stated to be the largest reinforced concrete building in the world.

Het Huis (Amsterdam) includes interesting, fully-illustrated articles on Old Zutphen and Old Hoorn.

Stone (New York) has some beautiful photographs of rock-hewn temples at Petra with a descriptive article.

The Western Architect (Minneapolis) illustrates several houses by Messrs. Mellor & Meigs; the prize-winning design for the Isaac Delgado Museum of Art, New Orleans, by Messrs. Lebenbaum & Marx; the Yeon building, a skyscraper in Portland, Oregon; Episcopal Chapel, Coronado Beach, California; an apartment house in San Francisco; St. Columba's School, Newark, New Jersey; Y.W.C.A. building, Wilkesbarre, Pennsylvania; and contains also an article with many illustrations on modern English shop-fronts.

Correspondence

[The Editor will not be responsible for the opinions expressed by Correspondents.]

The King Edward National Memorial.

SIR,—Last week's issue was quite a Crystal Palace number. Two suggestions in that issue, both were excellent in their way, should be adopted. Particularly is this the case when it is remembered that our late King's father was so intimately connected with the huge building at Sydenham. It would be a crying shame that this beautiful site on Sydenham Hill should fall into the hands of the speculating builder, although some of us might stand a chance of increased work. Personally my sympathy is with Lord Tenterden's scheme, and I have contributed my mite towards it.

Apologising for trespassing on your space,—I am, yours faithfully,

NORWOOD.

Is Architecture a Trade or Profession?

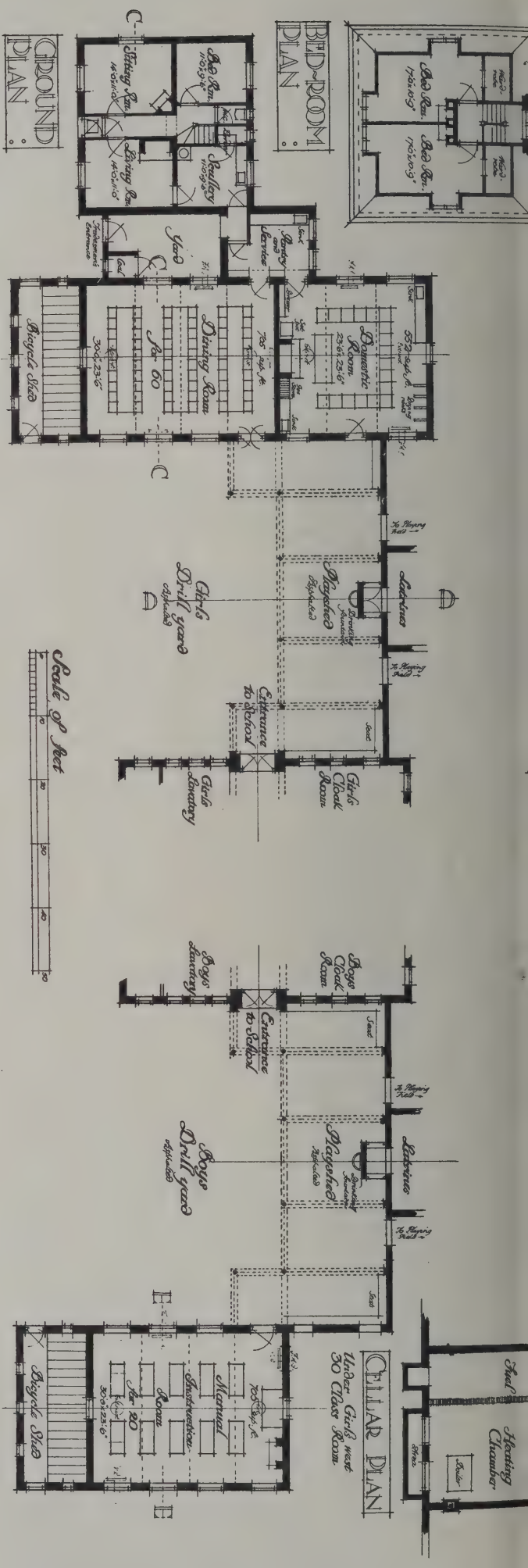
SIR,—The above query perhaps sounds somewhat strangely to you, and the readers of your extensively read journal, but consideration will probably justify my raising the point. Manufacturers are faced with strange problems in this respect, and when one is frequently being worried by members of your profession to take space in a book which Mr. —, architect and surveyor, is about to issue, or is faced with "Why don't you join the — Association I am connected with?" you will, I am sure, pardon my raising the point in the columns of *The Architect*, and suggesting that the principle I adopt is the best possible in all these matters. I am setting myself firmly against such suggestions, telling my would-be friends that the small amount I can afford for the means of publicity is devoted to the columns of the architectural and building trade journals, the editors of which papers I have always found most courteous and considerate, and that did I accept their suggestion I should feel that I was offering a bribe, and should in consequence be placing myself in a *wrong position*. One or two of my fellow-manufacturers are adopting a somewhat similar position, but if the large majority would do the same I am convinced that the annoyance would soon be discontinued. With apologies for trespassing on your space,—I am, your obedient servant,

A MIDLAND MANUFACTURER.

Hollow Party Walls.

SIR,—I should be grateful if one of your readers could advise me as to the best way to deal with a hollow party wall with two inch air space in existing buildings when it is necessary to resort to "pugging" to prevent sound penetrating the party wall. Where is it best to open the wall and what is best to use as a filling material; would sand poured in till the space was filled be efficient? If one of the advertised "pugging" materials is used how should it be packed in?—Yours, &c.,

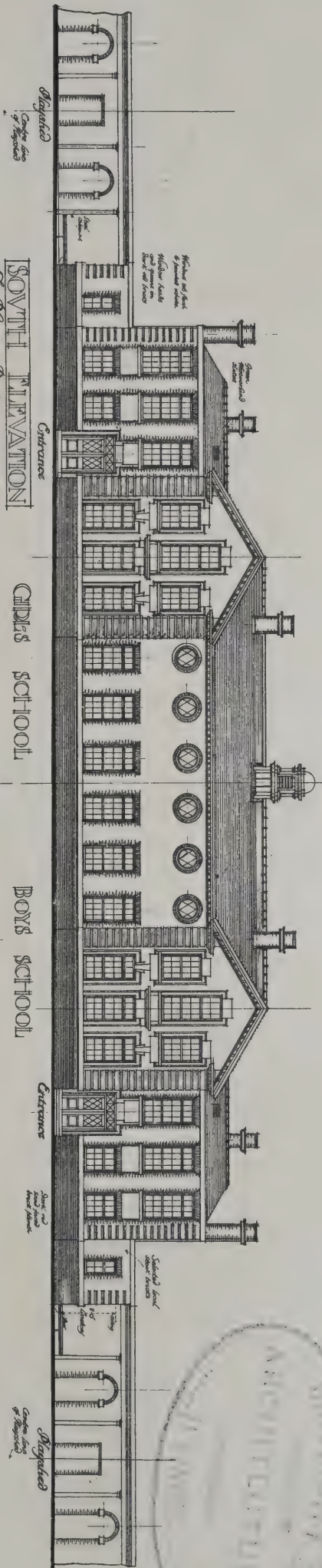
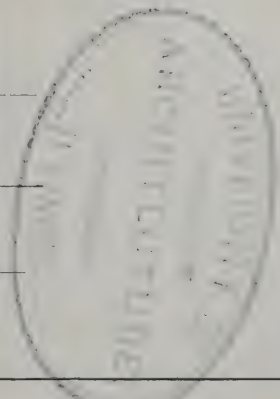
BIRMINGHAM.



SELECTED DESIGN FOR SECONDARY SCHOOL, BLYTH.

MR. EDWARD CRATNEY, ARCHITECT.

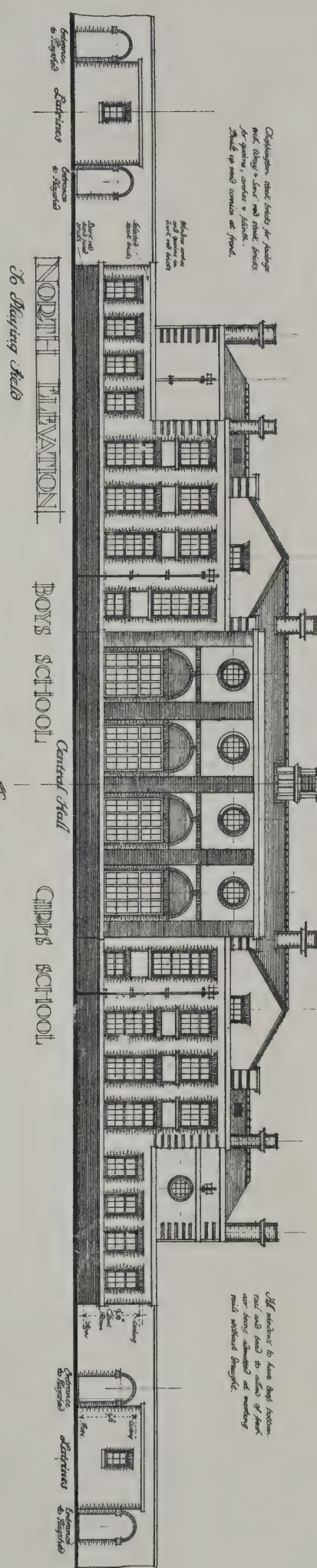
The Architect, Mar. 31st 1911.



Chapel and Hall
to provide school
rooms for the
girls and boys

Staircase
to provide
for the
girls and boys

Will provide to have boys' school
and girls' school to allow of best
arrangement of working
rooms without overlap.



Chapel and Hall
to provide school
rooms for the
girls and boys

Staircase
to provide
for the
girls and boys

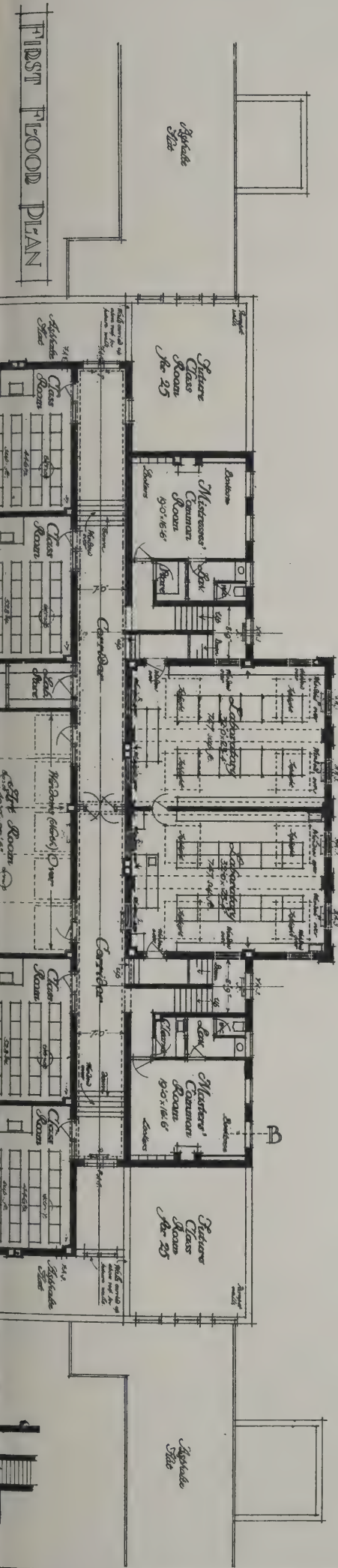
St. Mary's Road

Boys School

Girls School

Boys School

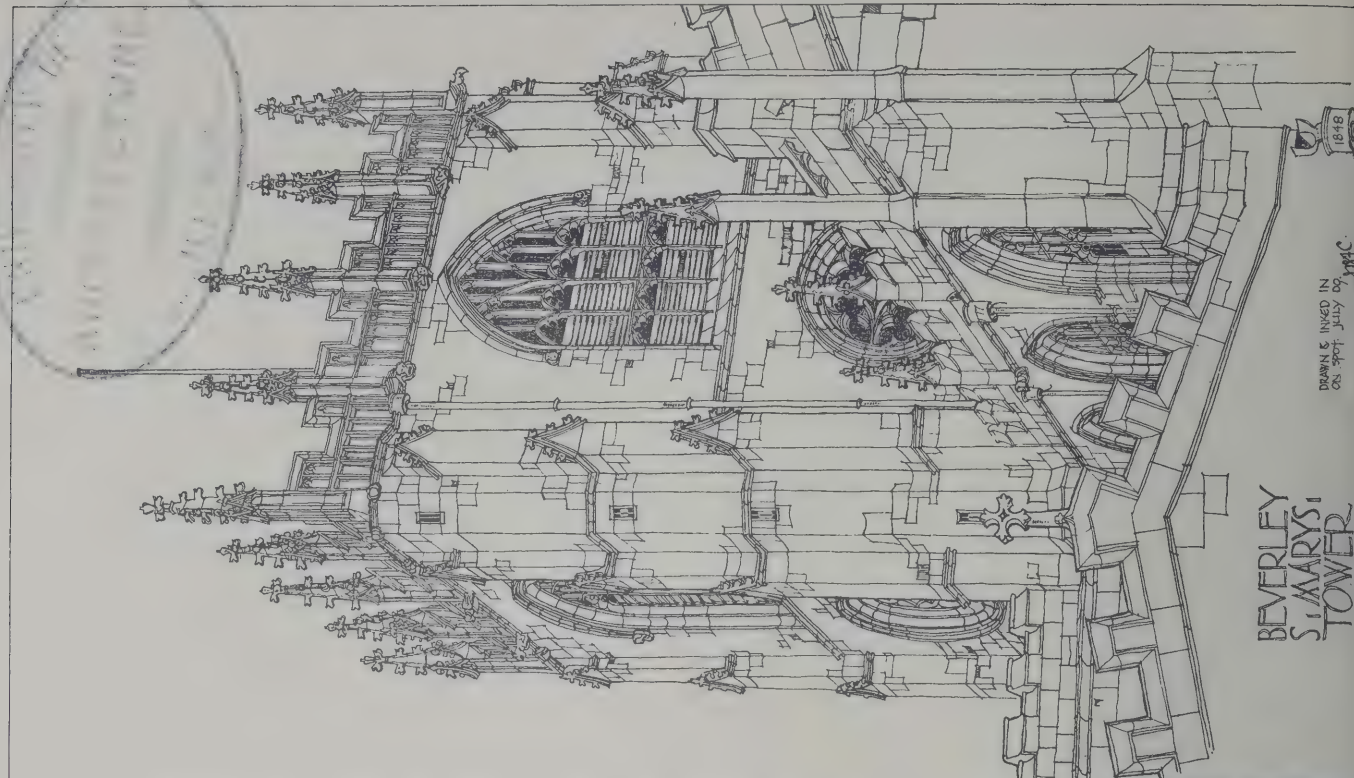
Girls School



Staircase
to provide
for the
girls and boys

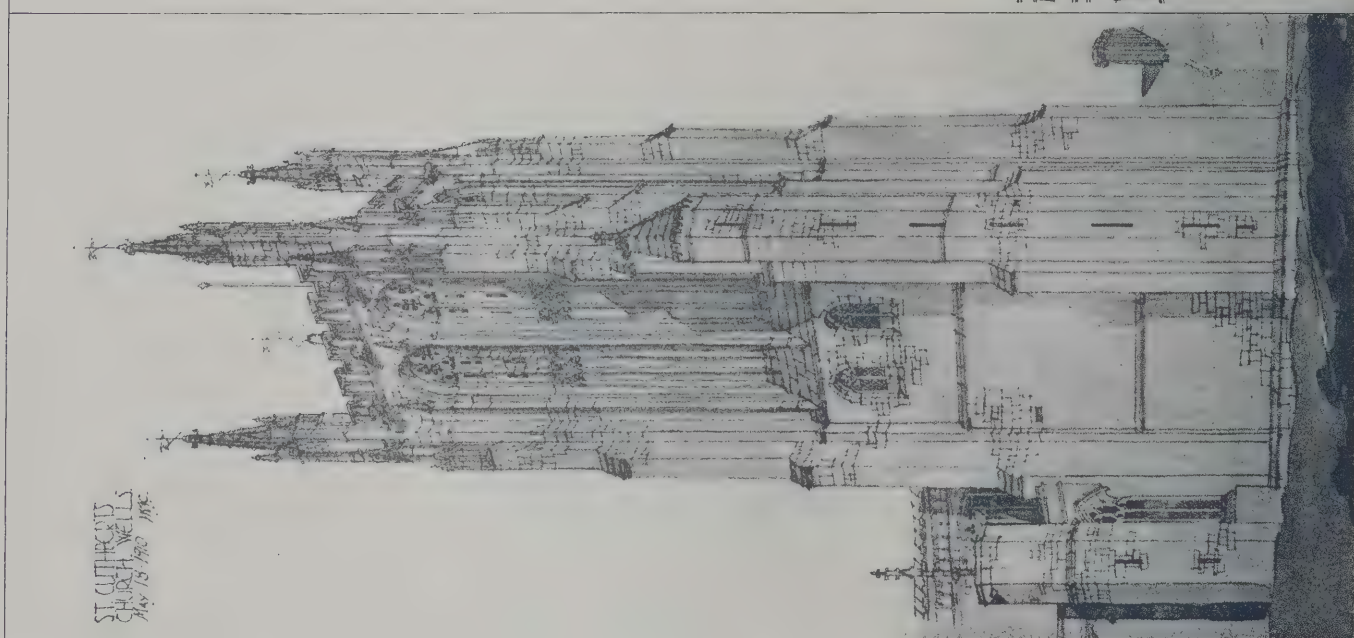
Staircase
to provide
for the
girls and boys

Staircase
to provide
for the
girls and boys

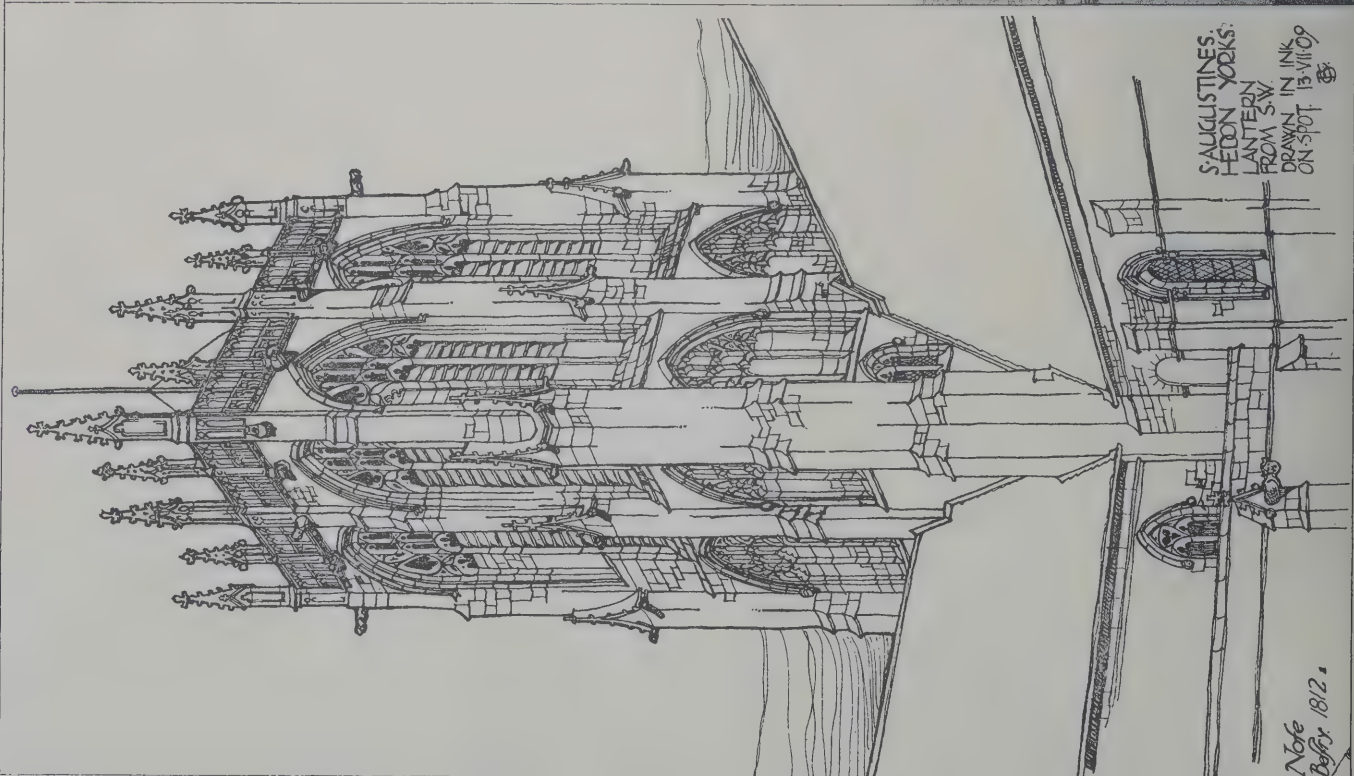


BEVERLEY
S. MARYS,
TOWER

DRAWN & INKED IN
ON SPOT. JULY 09. *W.C.*



ST. CUTHBERTS
CHURCH, WELLS
MAY 18. 1970 JMC.

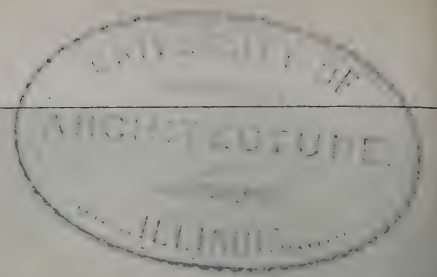


S. AUGUSTINES.
—EDON YOKKS.
LANTERN
FROM S.W.
DRAWN IN INK
ON SPOT. 13-VII-09

Noted
Befry. 18/2.



By Mr. J. B. F. COWPER



INK PHOTO SPRAGUE & CO. Lth. 4 & 5, EAST HARDING STREET FETTER LANE E.C.

CORNER CUPBOARD BY J. F. OEBEN. PERIOD OF LOUIS XV.



INK PHOTO SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C. 4

INTARSIA BY ARMADI (1460). IN THE NEW SACRISTY OF CATHEDRAL, FLORENCE.

The Architect.

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FORTHCOMING EVENTS.

Monday, April 10.

Royal Institute of British Architects : Business Meeting.

Tuesday, April 11.

Architects' Benevolent Society : Annual General Meeting of the Subscribers and Donors.

Guild of Architects' Assistants : Mr. H. Cox on "Co-operation in Architecture."

Wednesday, April 12.

Edinburgh Architectural Association : Annual Business Meeting.
Institute of Sanitary Engineers : Mr. Leon Gaster on "Hygienic Aspects of Illumination and the Progress in Illuminating Engineers."

Thursday, April 13.

Sheffield Society of Architects and Surveyors : Annual General Meeting.

NATIONAL ART TREASURES.

THE option of purchasing for the nation REMBRANDT'S painting of "The Mill" expired when less than 20,000*l.* of the 100,000*l.* demanded had been promised, and we are not particularly sorry.

In the first place the fact that the appeal made to the benevolence of the wealthy art-lovers of this country and to the patriotism of the many has fallen flat shows that Englishmen are now beginning to realise that the absurdly inflated prices for old masters which have been so skilfully engineered by the dealers are very little short of blackmail. The threat that our national art treasures, so far as they remain in private hands, will be cleared out of the country and transferred across the Atlantic unless the British public is prepared to dip its hand deeply into its pocket and outbid the *nouveaux riches*, the millionaires of the United States, of course at the same time allowing the astute dealers their fair and legitimate commission or profit, has clearly lost its power.

Even the device of allowing the picture to emerge from its comparative seclusion at Bowood into the public view at the National Gallery has failed to rouse the enthusiasm either of the art-lover or the patriot to the sufficient sacrifice of pounds, shillings and pence. Thousands of the British public have seen "The Mill," and have come to the conclusion and, we hold, a right conclusion that it is not worth 20,000*l.*, far less the half million dollars that are said to have been offered for it. This, we take it, is the meaning of the meagre response to the appeal that the British public should purchase "The Mill" for the National Gallery.

We cannot doubt that, if the nation had agreed with the estimate of its value that some unknown American is said to have formed of REMBRANDT'S great work, the money would have been forthcoming. It is quite true that there is only one painting of "The Mill" by REMBRANDT, and that anyone who wishes to buy it must pay a higher price than anyone else, but that is no more than to say that rarity is the chief qualification of the picture, as of "old masters" in general, and in this respect it is on a level with a curiosity in postage stamps or a freak in orchids.

We understand that the 17,848*l.* which was the total amount that Sir CHARLES HOLROYD had received in promises when his option of purchase for 100,000*l.* expired at midnight on Friday last, includes Lord LANSDOWNE'S own offer of 5,000*l.*, so that the estimate of the British public is that 12,848*l.* is the value as a great work of art of a picture for which they are asked 100,000*l.* This is highly satisfactory. Englishmen are prepared to buy works of art to be included in the collection of national art treasures, but they are not to be bamboozled into paying preposterous sums for rarities.

One feature of the sale of REMBRANDT'S "Mill" that

has undoubtedly weighed with the public in their decision not to subscribe for its rescue from the presumed hands of an American millionaire is the strict secrecy that has been maintained as to the name of the purchaser. All that is generally known is that the offer was made to Lord LANSDOWNE through a firm of solicitors on behalf of a client.

Recent revelations in the law courts both of this country and of the United States as to the methods and practices of dealers in antiques and old masters have excited suspicions of the *bona fides* of some of these wonderful prices that are said to have been offered, and of the existence of supposititious "clients" for whom dealers have professed to act. The market for old masters may truly be said to have received a nasty set-back from the failure of REMBRANDT'S "Mill" to attract competition for its purchase at the price named.

There is another aspect of the sale of this picture that is not unworthy of consideration, which also has acted as a deterrent to its purchase by public subscription. England is rich in old masters and other works of ancient art; America is not. Why should we desire to keep everything for ourselves and prevent the art-student and the art-lover in the newer country from reaping the advantages, educational and moral, that works of art are presumed to confer? We can spare a few hundred more pictures and still remain well endowed. Not alone in our museums but in the great country houses of the land—like Bowood—there is an almost unrealised wealth of beautiful things that are not seen by ourselves to anything like the extent that they would be by others if transferred to the States, and therefore fail to impart to the world the pleasure or the instruction of which they are capable. How few rich Americans there are who, like Mr. PIERPONT MORGAN, can stand on an equality with scores of English noblemen and gentry in the possession of art treasures. Therefore we can scarcely feel just resentment if Lord LANSDOWNE or anyone else parts with some item of his personal property that we may reasonably consider as amongst our national art treasures.

When we are thinking of these treasures and of the easy terms on which they have been purchased as compared with those sums that America has to pay in the present day, we should not forget the great work that has been done by the late Sir CASPAR PURDON CLARKE in placing our own Victoria and Albert Museum in the high position that it now occupies as a storehouse of art. His judgment and acumen in acquiring for the nation specimens of artistic handicraft for sums that in the present state of the market are ridiculously small has made his memory one that should ever remain green in the hearts of all lovers and students of artistic crafts. To him and to the ancestors of Lord LANSDOWNE and others of our nobility and gentry we owe to-day the astounding wealth of our national art treasures.

"THE ARCHITECT" STUDENTS' SKETCHING AND MEASURING CLUB.

THE drawings sent in for March show some useful and informative studies of Renaissance windows, all with one exception of English work. Thorough and careful measurement of such subjects are worth far more as education to a student than pretty freehand sketches. They need not be often repeated, as the lessons they teach, once learnt, remain part of the mental equipment and training, even though they may have become subconscious.

Mr. T. OWEN THIRTLE has made thorough and careful studies of two double-hung sash windows from Churchman's House, St. Giles's Street, Norwich, which, he tells us, are of the date 1725-1740. These simple yet effective instances of eighteenth-century work, with their shutters and other woodwork, are just the sort of thing that will be useful to Mr. THIRTLE when he comes to design an everyday double-hung sash window for a modern client.

"Lot" has measured and drawn a window from the Old Ashmolean Museum, Oxford, the date of which is 1682, and which is a very fine example of an ornately-treated window. The general drawings are to three-quarter inch scale and the details full size and half full size. The latter is not a good scale to which to draw detail, as it is apt to convey a false impression. If the subject is too large for full-size drawing, which is best, it is advisable to use either one-quarter or one-third.

"Finestra" sends the only foreign example, a window from the Palazzo Comunale, Bologna, which was an insertion by SERLIO in an earlier building. This is a good specimen and well drawn to half-inch scale with full-size mouldings.

"Sans Peur" contributes two windows from the front elevation of Gosforth House, Northumberland, one of which is semi-circular-headed with Ionic columns carrying the arch, the other square-headed with a segmental pediment on consoles. These we are told are the design of JAMES PAINE, date 1757, and are interesting examples. The drawings, which are to inch scale with details full size and quarter full size, are rather rough in execution, apparently from haste.

Mr. E. H. GIBSON illustrates a window from Holy Trinity Church, Leeds, date 1721-1727, and in addition to the measured drawings sends also a plan and sketches of the church. The scale of the measured work is suitable, inch and full size, but Mr. GIBSON needs to study sciography more thoroughly, as his projections of shadows are not correct, according to the usual convention, which should always be observed. Sciography is not primarily a device for making drawings look nice, but is intended to convey definite information of the projection of things drawn in elevation.

"L'Quayt" sends measured drawings of a window from Harewood House, Yorkshire, designed by JOHN CARR of York, and drawn to inch scale with full size details. This is a good example of refined eighteenth-century masonry.

We award the prize for March equally between "Lot" and "Finestra," nearest to whom in merit come Mr. T. OWEN THIRTLE and "L'Quayt."

NOTES AND COMMENTS.

WE learn from Sir ISIDORE SPIELMANN's letter to the *Times*, announcing that the British Section of the International Fine Arts Exhibition at Rome was opened by the King of ITALY on March 28, that Mr. FRANK SHORT, R.A., P.R.E., arranged the hanging of the architectural drawings, as well as the works in black and white. Sir ISIDORE does mention the names of Mr. ERNEST GEORGE, A.R.A., and Mr. HIPPOLYTE BLANC, R.S.A., as having "contributed to the success of the Section," which success, we take it from the whole scope of his exultation, may, as the planning of the building foreshadowed, be rightly esti-

mated as the triumph of painting over all other forms of British Art.

THE chief architectural interest in the *Art Journal* for this month lies in a review of "Highways and Byways in Buckinghamshire," by Mr. CLEMENT SHORTER, some of the sketches of buildings in which, by Mr. F. L. GRIGGS, are reproduced. In an article on Captain AUDLEY HARVEY's collection of pictures, which is remarkable for its excellent examples of modern painting, are reproduced instances of the presentment of architecture in *Le Pont Rouge, Albi*, by OLIVER HALL, R.E., and *L'Evêché de Chartres*, by HENRI LE SIDANER. The series of articles on "The Glamour of Landscape," by C. LEWIS HIND, is continued with examples of fifteenth-century Italian and Flemish painters.

In the *Connoisseur* for this month are illustrated some fine examples of eighteenth-century French—or Franco-German—furniture from the collection of Sir JOHN MURRAY SCOTT, in the Rue Lafitte, Paris. An interesting article on "Rings: Ancient and Modern," by RHODE KNIGHT, illustrates several curious and some beautiful examples of this branch of the jeweller's craft.

Mr. GEORGE BAILEY continues in the *Antiquary* his articles "On some curious carvings found in old churches," with sketches of two misericords from Wellingborough.

In connection with the Edinburgh Town-Planning Exhibition lectures have been given on various subjects connected with the betterment of towns. Amongst these was one by Mr. WILLIAM DAVIDSON on "Colour in Street Architecture," which seems to us to have struck a true note. Mr. DAVIDSON dealt with the question of the effect of sunlight on colour, and maintained that colour was more beautiful and effective in a grey light, and that strong sunlight destroyed all local colour. In dealing with building stones, he advocated a wiser selection of colour where two colours of stone were used, and referred to the great possibilities where two colours were used in grouped bands of colour. He maintained that red stone of a strong colour was unsuitable for monumental work, and was best used in isolated or semi-isolated situations. Mr. DAVIDSON did not advocate a wholesale use of colour in main streets, but suggested the use of small masses of colour in tympanums, over doors, shields, heraldry, as was so successfully done in Renaissance times in Italy, and advised that greater care might be taken with the use of colour in shop signs and external woodwork and applied colour.

Now that the proposal to put London's King EDWARD Memorial in St. James's Park has been abandoned, it would be a favourable opportunity to unite the scheme for a grand statue with Lord TENTERDEN's project for a National Memorial by the dedication of the Crystal Palace and its curtilage to the public. There is here ample space for a memorial statue as well as a permanent benefit for not only Londoners, but all Britons who visit London. The attempt to save the Crystal Palace is worthy of support for its own sake, even more than for its suitability for a memorial to King EDWARD, and we hope to see the requisite support speedily accorded to Lord TENTERDEN and his coadjutors.

THE promoters of the scheme for laying bare the foundations and investigating St. Robert's Priory and church at Knaresborough, as a memorial to the late King, have approached King George, with the object of securing his patronage. His Majesty, however, cannot comply with the request owing to the number of similar applications at present being received.

THE DECORATIVE USES OF SCULPTURE.*

(Official Report.)

By Professor W. R. COLTON, A.R.A.

PROFESSOR COLTON said that the subject of his lecture as announced on the programme was not quite on the same lines as he intended to take, but as it was not a very serious discrepancy he did not suppose it would matter very much. The subject of decorative sculpture, both ancient and modern, or as the programme of the lecture had it, the decorative uses of sculpture, was so full of interest to him and so mixed up with architectural, historical, and other questions that he hoped they would excuse him if he somewhat ran off the regulation lines, as it were, and got "side-tracked" a little in speaking of some of the branch subjects,



THE WAVELET.—By W. R. COLTON, A.R.A.

which he was sure would be of equal interest, at any rate as far as he was concerned. First of all he rather wanted to beg the question by saying that sculpture was decorative according to its quality and style—that was, the scale of its execution and its style was naturally what the author of the sculpture wished to say, what he had in his mind, in working at a particular sculpture or group, whatever it might be. As they knew, the Greeks generally went for dignity and a calmness in their statuary—they wished it to be calm and dignified and without any theatrical nature about it. The Egyptians went for the awe and intensity of expression of their religious feeling in their statuary, while in the Christian school it was rather an expression of sacrifice and terror, as it were, and in addition they expressed more simple things, such as love, grace, &c., which were all fine subjects for sculpture. In his opinion, the domestic was never a really good subject for statuary, and it was hardly allowable for fine sculpture. For instance, he did not think that a child and a puppy could be said to combine well as sculpture. Of course, no meaning behind the work was decidedly bad sculpture,

just as architecture without meaning was bad architecture.

That brought him to rather a serious point because, in his opinion, in the wonderfully impressive buildings of Greenwich and St. Paul's Cathedral they found the germs, as it were, of much of what he ventured to term the hardly logical architecture of to-day. They all knew the pediment, for instance, was the gable ends of a house or building; the dentils were the ends of the rafters, and that the arch was constructed to take a great weight above it. Many of those things, however, had become useless from the constructional point of view, and while it was true that some were allowable because they had become a form of conventional ornament in that particular class of architecture, he did think they must draw the line somewhere—they must be logical in their architecture, or else they were going in the wrong direction—a very wrong direction indeed. He dare say they had all noticed that architecture was becoming of late rather mad, illogical and senseless in some of its points. He had spoken of the arch which supported the superimposed mass—or which should do so, but which was now ordinarily used as a feature on the face of the building with no weight above it. Then there was another feature—the lintel, which was the construction above the window or door space, which was supposed logically to take the whole weight of the building above it, and the essential point of the lintel was that it should be absolutely constructional. If, however, they were to go about London and look at even some of the finest buildings they would see that it was quite a common thing to break the lintel with one or even more keystones. This was becoming quite a common thing, and it certainly was not logical. He considered this really bad architecture, and could not imagine what excuse there could be for going against the whole principle of construction. But some people were not even content with a row of keystones along the whole length of the lintel, but placed one, two or three keystones on top of the centre one. Without further enlarging on that he would only point out that it did not seem to him really the right lines to go upon. Of course, in St. Paul's Cathedral they would find one or two of these points slightly emphasised—it was the commencement of the germ, as it were; but St. Paul's was such a beautiful building and he was such an admirer of it that he personally considered them as mere ornaments. In the exaggerated modern arrangement they ceased to be reasonable at all. Mr. Colton next showed some photographs of St. Paul's Cathedral and pointed out the pediments over the windows, which he said had become the ordinary ornamentation of the window and served the intended purpose of protecting windows from the rain. In the case of St. Paul's, however, the windows were already protected by the cornices above. The beauty of the placing of the sculpture on St. Paul's was, it seemed to him, very great—it enhanced the value of the building, and there was no error of taste which was so often seen in the placing of sculpture in modern buildings.

The original pediment was the gable end. The Greek pediments were generally decorated with figures; and those figures were some of the most beautiful which we and other nations possessed. The figures in the pediments were, of course, a long way from the eye, but they lost none of their beauty from being highly wrought. A Greek never failed to make his figures highly wrought. The backs of the figures were as beautifully finished as the front. The Greek architect never for a moment thought that any power was lost by such finish. Nowadays we were inclined to think that we lost power by the beautiful finish of the figure if it was to be placed some distance from the eye. Mr. Colton exhibited a photograph of the "Three Fates," and said that these figures together with the Elgin marbles of the Parthenon frieze were never really seen until they were brought to the British Museum. Several of the figures from the Parthenon frieze were thrown on the screen to show the wonderful finish given them by the Greek sculptors notwithstanding the fact that they were placed in positions far away from the eye. He dare say that many of the audience after climbing up some tower had been astonished to find themselves amongst roughly chipped blocks which hardly represented figures at all. That was the modern idea of how sculpture should be done for architectural purposes, but the Greeks never thought that. The Greek artists must have always thought of the time when these pieces of sculpture should be dug up and placed in a museum. They were infinitely precious to us, and it would be seen that even the foot of one of the figures was a thing of beauty and delight. They could not say that of any sculpture which had been done in modern times for architectural purposes.

* A lecture delivered at Carpenters' Hall on March 29. Tenth and last of the Series on "The Arts Connected with Building."

Of course the conditions had changed since Greek days. They must not forget that time was not then so important; perhaps money was not so important—there was not such a cry for motor cars instead of sculpture, and emperors and rich people were more prepared to pay for real, thorough first-class work. Then again there was the question of time. Nowadays people would not wait for the work to be done. If a few years were taken over a great memorial the sculptor was grumbled at, and, of course, the finest work in sculpture could never be done under those conditions. Good work must take time and it must cost money; there was no getting away from those two facts. Nowadays the higher sculpture was placed the cheaper it was supposed to be, and therefore the rougher it must become. The lecturer next showed another part of the Parthenon frieze at the British Museum which was placed fairly high with a big projecting cornice beneath it, and he said that the width of the Parthenon was never sufficient for that relief ever to have been seen properly by the Greeks and yet it was the most superbly rendered relief frieze that one could imagine. It was most subtly and beautifully modelled—in fact it was one of the masterpieces of the world, and if any of his audience had not seen it he advised them to go to the British Museum and look at it.

It was supposed by archæologists and antiquaries that this frieze was coloured. But, while it might have been coloured at some time—perhaps by some emperor who loved colour and thought his temple was not sufficiently effective—he was quite certain it was never coloured by the sculptor himself or with his permission. Colour on a subtly rendered surface of that sort would be absolute vandalism—the years of labour it must have taken to have wrought that work would have been spoiled and obliterated by the use of colour upon it, and therefore he thought there was not the slightest doubt whatever that the colouring of that frieze must have been done at some later period. Of course, colour had its advantages—a thick pigment was effective from a distance and was naturally welcomed by the worst sculptors because it covered a multitude of sins. The sculptor might have preserved his work by washing it with some transparent fluid, but if they ruined a thing in preserving it he did not quite see the advantages of it. At any rate colour on sculpture certainly acknowledged that the highest results had not been obtained. They knew that colour was used on certain sculpture by the Greeks and Assyrians and Egyptians, and they also used coloured materials, but not, he thought, on their finest works. They found the great statues in the temples such as Minerva and Jupiter by Phidias were made of coloured material; the eyes and the face and the drapery were coloured, but these were rather different to other sculpture. These figures were really gods and goddesses, and were not sculpture in the ordinary sense. They were no part of the architecture of the temple, but they were the presiding and colossal deities of the temple, and were coloured simply to impress the common people. A coloured figure was more impressive and was more thoroughly understood by the commonplace mind, as they could well imagine—these deities possessed the temple as it were and these figures were coloured so as to strike awe and terror into the beholders. They were so colossal that colour had little effect on the subtleties of their modelling. They were larger planes and the modelling was not so delicate, and the effect was from a different point of view, *i.e.* from the religious rather than from the artistic point of view. There was a note on colour which he would like to read to them which was given by a Professor of Sculpture at the Royal Academy many, many years ago—one of his predecessors. He said: "The absence of colour in a statue (there, of course, was meant polychromatic colour) is in short one of the peculiarities that removes it entirely from common nature so that the most vulgarly constituted mind might contemplate it without it causing any feeling of a sensuous kind. The eye learns to look upon it not as a real existence but as a sort of visible representation of some admirably concentrated essence that excites our admiration or calls forth our imitation, and it must have been a sentiment of this kind that caused the gradual disuse of colour in the old times, as well perhaps as the occasional use of it when the arts were subservient to rules of a less refined taste. These objections to the use of colour could apply less to colossal works, whose magnitude in themselves relieves them from all proximity to everyday life, and again the smaller works where the variation from the natural size permits a too near approach to reality. We have still with us those who desire to work in delightful coloured material and the opposing school that feels the finest workmanship, particularly in the modelling of bare flesh, cannot possibly be seen

in a highly coloured material, more especially if that colour is polychromatic."

The "Belvedere Torso" was one of the greatest works in the world, and was supposed to be the foundation upon which Michel Angelo founded himself. In the work of Michel Angelo they would see a great difference from the work of the more primitive Greeks. The Greeks had very simple tastes and very simple ideas, and their sculptors crystallised these ideas into very definite forms. Pericles was the man who inspired the great sculpture of Greece, although it was supposed to be Phidias, yet Pericles was the man with the moving mind of Greece. No doubt he got other architects and sculptors around him, and his spirit entered into them. He did not think there was any other explanation of that wonderful time in Greece than that Pericles was the man who was the motive power of all the fine work. Of course, the architects and artists were great, but still behind it all there was the moving spirit of the master mind, and that man he thought was Pericles. Michel Angelo was brought up in a different school—a different religion had come into being; the Gothic, as it were, was grafted upon the Greek, and he wished to portray the very strenuous feelings of religious mystery which had then arrived, and which had been growing ever since the Greek times. Michel Angelo



TOMB OF GIULIANO MEDICI, FLORENCE.

wished to portray much more behind what he did—he was the great moving spirit, but, apart from that, he seemed to have founded himself upon this torso as far as the wonderful movement of the construction, the light and shade rippling over the muscles, and the different planes of the various parts of the body. Mr. Colton proceeded to show some sculptured figures by Michel Angelo on tombs, and pointed out how similar the feeling was to that expressed in the "Belvedere Torso." Instead of the rather severe type of the Classic school of sculpture they saw a tremendous effort of meaning behind the figures. The figure of Giuliano de' Medici over his tomb in the Medici Chapel, Florence, was full of mystery, and was evidently the work of a man of thought, and who wanted to convey a sense of the power of the mind. Again, the reclining figure below it of a woman representing Night gave one the idea of a woman worn out with intense toil, and was tremendously impressive—the mother of probably many children worn out with fatigue and thought, and that was what Michel Angelo always wished to impress. There was an immense feeling at the back of all his work. He was not so particular about his proportions—perhaps he was disproportionate, but in his disproportions he tried to impress one with his own thoughts and feelings.

In the group "Christ and the Madonna" he said the disproportion of the figures could be particularly observed. Christ was a grown man lying on the lap of His mother, who was very much bigger in proportion than Christ. The sculptor thought it was allowable to make the figure of the mother much bigger than the figure of the grown man Christ, in order that he might convey the meaning of motherhood, that she was the mother and He was still the child. Michel Angelo was an architect as well as a sculptor; he was more or less responsible, at any rate, for the dome of St. Peter's, if not for the whole of it. There was a curious feature about the figures on the Medici tomb which he did not quite understand. It was quite obvious that the pediment of the sarcophagus was much too small for the figures—these had an unpleasant "sliding off" effect, and the architectural part seemed to be much too small. It was a curious thing, but they would find drawings in the British Museum and in Paris where these parts were not made nearly so small as they really were, and why Michel Angelo should have departed from those drawings it was difficult to say. It was not known whether somebody else took them in hand and altered them, but, at any rate, in the drawings the architectural portions were made much bigger, and the figures did not appear to be sliding off.

Mr. Colton next showed a photograph of a Cupid of Michel Angelo, which, he said, if it were anywhere abroad would attract great numbers of pilgrims, but as it was only a few steps out of Piccadilly nobody went to see it. It was worth untold gold, and was quite free for anybody to see. It was in the Diploma Gallery of the Royal Academy, but he was afraid that very few people took advantage of the opportunity. Attention should be paid to the unfinished portions, which were a very common feature in Michel Angelo's works. As he had remarked, Michel Angelo began to get disproportionate in his limbs and also in his figures—he was rather inclined to think that disproportion was more emphatic in certain ways, and emphasised what he wanted to portray, and here they began to see the unfinished work which he left. He did not leave it intentionally, but Michel Angelo was an architect, and he used sometimes to go for a year or two at a time to the marble quarries and quarry the marble himself. That, of course, took up a great deal of his time, and there was not time for him to finish completely the great amount of work he was engaged upon. He wanted to emphasise that point, because it led up to a great deal of what was going on in modern statuary at the present day.

Rodin was perhaps the greatest artist and sculptor in France. He was a great artist who had thought and mind behind him, but still in spite of all that he was a very dangerous instructor indeed for the coming sculptor. Although he tentatively founded himself upon Greek sculpture, he had in reality founded himself entirely upon Michel Angelo. He finished his work less than Michel Angelo, but where Michel Angelo accidentally left work unfinished, Rodin did it intentionally. The danger of this practice, with its malformations and disproportions, was that the fine ideals and conventions of the Classic art would be displaced. The post-Impressionist pictures shown at the Grafton Gallery were all of the same movement—the movement of eccentricity, of attempting to portray something which was hardly capable of being portrayed, with the result that the beautiful, fine, dignified Classic art was displaced in favour of the eccentricities of the day.

A curious thing that was happening in England in this regard was the mutilation of statues. This school, which had been formed in Europe for some time, had now formed itself into a school for the mutilation of sculpture, and England had been so influenced that at an ordinary exhibition of sculpture in London he had seen a large proportion of the works mutilated. It had been discovered by a certain school that to lop off a leg or two legs, perhaps an arm, or two arms and a head greatly enhanced the value of artistic production. At any rate, it left more to the imagination—like the painter of a battle picture who in order to save painting in more soldiers put in a tremendous amount of smoke. Some genius of this type had gone even a step further and split off a fragment of a face for exhibition, while another one had a crown without a head. He remembered that at the particular exhibition he had in his mind there was a most curious and pathetic female figure which had the appearance of having been caught sitting on a railway line. She had suffered amputation of both legs at a most unfortunate section, so that as one looked at her they saw the torso upright and two round holes which cut the legs completely off. And that was supposed to be a great work of art. He quite understood how the sculptor felt in the matter. It was so much easier

to do a portion of a figure than a complete one, and it was also just as valuable if they could do a whole figure and cut off the head and call it one work of art and to think of the torso as another; it saved time. Although they might joke about it he felt very seriously in the matter, and he wondered how long it would be before the public got to see that this mutilation of sculpture was a very grave thing. Then there was the chaotic school.

It was to be hoped that we should not have any sort of eccentricity in connection with the new St. Paul's Bridge, which would afford a chance which might never occur again of doing something very beautiful in the City. He could imagine the approaches having very beautiful groups and being made really a fine thing. Whichever direction the bridge took, the buildings could be cleared away in such a manner round St. Paul's Cathedral that it would immensely enhance the value of the view about that neighbourhood. Sculpture could be put upon the entrances of the bridge, and it could be made most decorative and artistic. As the chance might never occur again he hoped that whatever was done would be done in the finest possible way. Of course, utility was something, but beauty was also something—we must never forget that utility was not everything, but that there was a beauty of the mind and the soul which we had to consider as well as the mere ease of communication.



A very charming bridge (although the sculpture was not particularly good) was the Pont Alexandre III. in Paris, which was built for the last exhibition. Its piers and sculpture were really very fine and made one think that it was that which they required in decoration. They wanted decoration to make one think, or dream and build castles in Spain, and to take one's mind away from the sordid idea of merely money-making. Decorative sculpture caused one to feel that after all the mere aim of life was not the getting or the spending of so many hundreds or thousands of pounds, but that there was something nobler—the making of a fine, beautiful thing which would last for ever.

England was a land of good intentions—and they knew where the pavement of good intentions led to. All over England were to be seen plinths, pedestals, niches—they were to be seen everywhere in cathedrals and Government buildings, with nothing on them. The other day he was passing along Hyde Park Corner and saw the Constitutional Arch where a great group of sculpture was going to be placed. He looked at the arch and was wondering when the authorities were going to put the sculpture upon it, when to his surprise he saw smoke arising. He thought that could not be a pedestal for sculpture—it was evidently a chimney pot. They would have to make some constructional alterations in that pedestal before they put sculpture upon it, or else we should be blaming the English climate for the sootiness. We had these good intentions in England; we started buildings with niches to be filled, but the sculpture never came. We always felt that we had finished when we had provided the kitchen and the lavatory accommodation—we did not think of the beauty of the soul and what was necessary for it. We had recently built a processional arch under which monarchs of all countries would pass, but we were not satisfied with making simply a beautiful arch—we must make it a residence for some

Government official at the same time. One could imagine the kitchenmaids hanging out of the top storey and watching the kings pass by. Personally he could not see either the logic or the sense of such a proceeding. It appeals to some officials; they feel that if in putting up a statue to fame or immortality a kitchen is made in the interior then they have scored and gone one better than the artist. Moreover, they get a slight return for their money, which is the great thing in England. Nothing for beauty's sake alone seemed to suffice. Here in England we always wanted to graft the useful upon the beautiful and decorative instead of trying to make the useful beautiful.

The refining influence of beauty upon the human mind was tremendous. The governing powers did not realise that half the gross vices of mankind would be cast aside if the mind was properly brought under the influences of beauty at an early age. They never realised for a moment that that was one of the educational factors. In our educational departments in art we taught many hundreds and thousands of the pupils preliminary drawing and so on, but we did not surround them with beautiful objects, nor did we teach them to appreciate the beautiful such as was to be found in landscapes, sunsets, architecture, and sculpture. If the people were to be taught to appreciate those things they must be brought near to the common person, not only in the West End but in the East End. They must bring beautiful sculpture close to everybody; they must decorate their Board schools and make them beautiful in some way so as to surround children from the very beginning with refining influences, and he was sure that it would pay them over and over again to cultivate the human mind in that way. Why should not the playgrounds of our schools be made into something of a garden? Why should not bronze fountains (perhaps the most beautiful thing in sculpture) be placed in school playgrounds? It might be said that the children would smash

some of them. There were two qualities about a memorial which he imagined were inherent. A memorial to be a memorial must be a visible thing; also it must justify itself—it must be a love-offering, a sacrifice to the dead, free of any hidden or obvious benefit to the giver. If one gave a loved one a gift, they did not give something that the giver could use himself or which would be any advantage to him; and

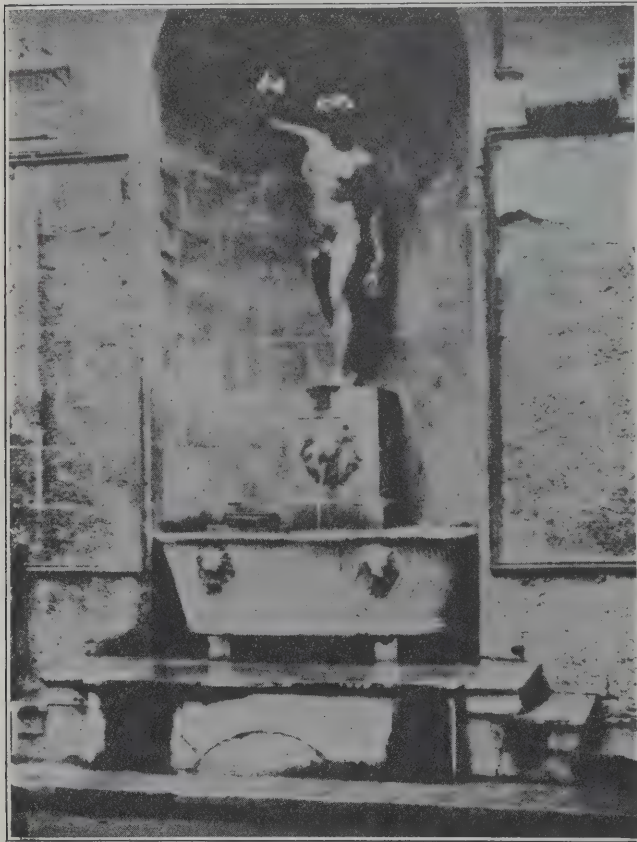


FROM THE ALBERT MEMORIAL, LONDON.

By H. H. ARMSTEAD, R.A.

therefore he thought that a memorial to a beloved Sovereign or great man should be absolutely a sacrifice to the dead, a free gift. When Prince Albert died a great many schemes were mooted for memorials. Some of them seemed very curious, in fact very humorous, and more like a Gilbert and Sullivan opera. One town for many years had wanted a new drainage scheme, and some people conceived the brilliant idea upon the death of Prince Albert of raising money either by the rates or voluntarily for a scheme to be called the Prince Albert Memorial Sewer. That was an example of the very worst form of memorial.

In London we had done very well in regard to the memorial scheme to the late King, but all over the country there had been a tremendous number of suggestions, many of which appeared to him as a sculptor to be very funny indeed. The first suggestion that so struck him was that Nelson should be dislodged from his pinnacle of fame and a statue of King Edward placed on the top of the column. He did not know what it was proposed to do with Nelson; but, at any rate, they were going to change the name of the Square. When he heard of that suggestion he wondered whether the battle of Trafalgar had become any less important now than it was at the time it was fought. It seemed to him that England would never have occupied the position she now did if that battle had not been fought, and it was just because it was well that England should always remember Trafalgar that that monument was justified. His point was that if a man had done anything great in his lifetime, any memorial that was erected should be of such a nature that it reminded people of the dead, and anything which did not lend itself to that was not suitable for a memorial. Coming nearer home, he saw in a newspaper—he did not know whether it was true—that the exterior and interior of the Mansion House should be done up as a memorial to King Edward. If that suggestion was really made, it was certainly a case of those who wanted to give their cake away and eat it too. Then there was a suggestion that the façade of Buckingham Palace should be repaired. That would be in a sense a memorial to King George as having been done in his reign. But that was a neglected duty of the State. Buckingham Palace was one of the worst palaces in Europe, but he failed to see that there could be any connection between repairing that Palace and a King Edward memorial. Another suggestion was a great crusade against consumption, and there were several hospitals which had schemes—all excellent in their way, but which could in no way be considered a memorial to any one man; and as the hospitals would eventually be taken over by the State, they would then lose their individuality. Memorials such as those could not in any way make our descendants realise the features and attributes of King Edward. Hundreds of clock towers were to be erected in different towns in England—a form of memorial which, to his mind, was utilitarian in the extreme and most inartistic. One scheme was that the animals at the Zoo should walk over to the Crystal Palace—perhaps some people could see the connection between that and a memorial to King Edward,



FOUNTAIN WITH BRONZE BACCO, FLORENCE.

them. He admitted that for a time they might, but later on they would learn to appreciate them, and would be only too anxious to have them. The mere fact that at the present day the public would break up such things proved that they had never been taught to appreciate them—they had never been brought under the influence of the beautiful in the world which would make them love it; and, therefore, when they saw anything beautiful they were inclined to break it up.

It was advisable to comment on some of the proposals for memorials to commemorate the late King Edward, for he thought that we were going very much astray in regard to

but he (Mr. Colton) could not. Another suggestion was that the Crystal Palace should be financed and set on its legs. In his view, the Crystal Palace was good enough for a temporary exhibition building, but it afforded an example of the gross misuse of material. He did not know whether he was libelling it, but he understood that when the sun shone on it the glass cracked through the expansion of the metal underneath. The Crystal Palace had one charm to him, and that was its wonderful collection of casts from all parts of the world, which cost a great deal of money, and it would be a



FONTAINE DES INNOCENTS, PARIS.

thousand pities if those casts should be allowed to be in any way damaged or destroyed. Many of them he believed had been in the past damaged—at one time during the circus Charley, the elephant, broke loose and knocked down several Venuses.

These various suggestions that had been made for memorial schemes proved that we somehow seemed to grudge money for objects that appealed to the decorative sense. We failed to realise the fact that miserable surroundings made miserable human beings. The decorative objects that we had in London we did not even keep clean. Absolute beauty was on the surface only, and if that was allowed to be corroded with carbonic acid or sulphuric acid they could never get beautiful objects. If one built a house in London they naturally expected to have to clean it more than they would a house in the country, and if we put down a beautiful object in a smoky town we must, of course, expend a little in keeping it clean, or if it was a precious object we must expect to spend a little in looking after it. As a rule, however, we put the object up and said, "Let it do what it likes," and then when it got dirty or discoloured we blamed the English climate. The Albert Memorial was an example of the contrary kind. That Memorial had existed for fifty years, and it was as good to-day as it would have been had it been standing in Paris or Vienna or anywhere else, simply because it had been kept fairly clean. Whilst he was on the subject of that memorial he wanted to point out that there was some very fine decorative work upon it. They generally despised it and thought it was not good, but although it was too polychromatic in colour certain parts of the sculpture were very fine.

The Albert Memorial, by Armstead, together with Stevens' Wellington Monument in St. Paul's, and Gilbert's fountain in Piccadilly Circus, were some of the most beautiful objects of decoration we had in England. The Wellington Monument was perhaps one of the finest examples, and as Stevens,

the sculptor, was trained as an architect, it was a very precious thing to architects and sculptors in England, because it was the key to what he thought, having been trained in both directions, was the proper scale between sculpture and architecture, which was a matter very badly understood here. The lecturer also showed a photograph of a chimney-piece in Dorchester House, which he considered an extremely fine piece of decorative work. Mr. Colton next showed a number of photographs of Hindoo decorative work, and also an instantaneous photograph of a battery of artillery in the field, and pointed out the peculiar movement of the horses' limbs, which, he said, would have to be modified in sculpture, and, to illustrate his meaning, he put on the screen a portrait of the figures on the Artillery Memorial in the Mall. He also showed a number of photographs of fountains in Rome, the fountain of the Innocents in Paris, by Goujon, the Lions fountain at the Alhambra, and the fountains in the Luxembourg Gardens and at Versailles. He also showed a photograph of a fountain which had been designed by himself for Hyde Park, and which had been greatly mutilated. With reference to the latter he said his own feeling about the matter was that it was because the spectators did not understand it—the people had never been educated to appreciate such a thing as a beautiful fountain, and when they saw something strange their natural instinct was to destroy it.

They must bring sculpture close to the masses, and pictures and all beautiful things, if they were ever to be taught to appreciate them. We should throw back the railings in our parks and make the terraces open to the road, and place there sculpture and beautiful flowers and trees, and not have railings in between—that was the fault of all our parks. We should have beautiful terraces with marble seats and fountains and statuary, so that the people could get close to them and love them—it was impossible to appreciate sculpture or pictures in galleries. Museums and galleries were for the highly educated, and even then it often gave one a headache to look at these things. Where the mistake was made was in putting these beautiful things in museums. A school-house and a play-yard could be made a thing of art, but fine designs must be brought to where the people lived. If the man was a potter, working in the Potteries, or a metal-worker in Sheffield, the finest examples must be brought to where he was, where he could see them day after day in his lunch hour. It was impossible to learn the legend of art by coming up to South Kensington Museum on a holiday trip. The mind naturally refused to consider many examples in any art at the same time—it was impossible that it should be so. A work of art until it had become absolutely familiar must necessarily tax the mind of the onlooker. Later on it would be a pleasure, but until that state was reached an effort was always demanded, and for that reason a great number of beautiful works together could not but be a strain on the mind of the observer. Most of them had felt how delightful it was to wander through some of the Continental cities and stumble upon works of



THE THREE FATES.—From the Parthenon.

art unexpectedly, such, for instance, as the statue of the Triumph of the Republic in Paris, and a hundred other examples. What could one find in the way of sculpture say at Peckham, Dalston, or Kensal Green? As a nation we had become mentally drab and gray with the continual cry of utility, by which we were losing the most beautiful part of our lives. He did not merely ask for the encouragement of sculpture, painting, and architecture by "the powers

that be," but he demanded it as a great educational power—an educational force that it was criminal to allow to lie dormant and disused—a force which seemed to him to be the most powerful that could be called upon to fill the void formed by the natural decay of religious beliefs, and it would be at our peril as a nation if we should disregard the influence of this beauty upon the brains of our people through the arts.

SIR CASPAR PURDON CLARKE, C.I.E., C.V.O.

WE are indebted to the *Manchester Guardian* for the following admirable epitome of the career of our friend Sir Caspar Purdon Clarke:—

Sir Purdon Clarke was born in 1846. He was the son of the late Edward Marmaduke Clarke, of Richmond, County Dublin, and of Mary Agnes, daughter of the late James Close, Armagh; but, although settled in Ireland, his father came of an old Somerset family. Sir Purdon Clarke was educated at Sydenham and Boulogne; at the age of sixteen he entered the National Art Training School, where he gained a medal in 1864, and a National Medallion in the following year, which also saw his first official employment as a draughtsman on the Houses of Parliament buildings under her Majesty's Office of Works. In 1867 he was transferred to the architect's office of the South Kensington Museum, then in its earlier stage; and in 1869 was employed by the Museum authorities to superintend the making of a large and valuable series of reproductions of art objects in Italy, the fine collection at South Kensington of paper casts of the mosaics at Ravenna being due to his own industry and ingenuity. In 1874 he laid the foundations of his great knowledge of Oriental art by a visit to Persia, where he was employed for some time as architect of the Consular buildings at Teheran, and in making surveys, some of which led him into remote districts of the country. In 1876 he travelled, on behalf of the Museum, in Greece, Turkey, and Syria. He was architect of the Indian section and commercial agent to the Government of India at the Paris Exhibition of 1878, and in 1879 was once more given the task of collecting art objects for the South Kensington Museum in Spain, Italy, and Germany.

In 1880 began his long association with the arts of our Indian Empire; for, on the breaking up of the old India Museum, he was employed to arrange and classify that portion of the collections made by the company which was deposited at South Kensington. To make the new section completely representative of the industrial arts of India, he was then sent out to India on a special mission of collecting, the fund at his disposal being furnished partly from official sources and partly from the profits of the exhibition of the Prince of Wales's Indian presents. In the execution of this duty he traversed the whole country, and acquired a wonderful collection of fine specimens of native craftsmanship, and especially of textile fabrics and metalwork; he received as a recognition of his success the Companionship of the Order of the Indian Empire and the newly-made post of Keeper of the Indian Section of the South Kensington Museum.

For some time after this appointment Clarke's official progress was slow; but when promotion came it came rapidly. In 1892 he was made Senior Keeper of the Art Museum, in 1893 Assistant Director, and in 1896 Director in succession to Professor Middleton. This important and responsible office he held until 1905, when, to the surprise of everyone, he resigned it in favour of the Directorship of the Metropolitan Museum of New York.

Clarke was a competent and ingenious architect. His official engagements kept him, however, from a large practice of his profession; and the only public buildings which he executed were Cothelstone Church, Durham; Alexandra House, a great boarding-house for women students at Kensington Gore; and the National School of Cookery. But his Indian pavilions at Paris in 1878, at the Indian Exhibition at South Kensington in 1886, and at Paris again in 1889 were extraordinary specimens of artistic design and construction, carried out, for their temporary purpose, cheaply and effectively, but with great skill and plausibility. The French Government recognised these qualities by the award of bronze, silver, and gold medals, and of the Legion of Honour. Clarke was a Fellow of the Royal Institute of British Architects and of the Society of Antiquaries, and a member of the Royal Asiatic Society and of the Royal Academy of Madrid. His direct contributions to the literature of the arts were few; a fine volume on Oriental carpets, produced under the direction of the Austrian Government, was the chief of them. He had little time for authorship,

but was an apt and instructive lecturer. He was a keen Freemason, and contributed some valuable historical studies to the publications of the Quatuor Coronati Lodge.

The customs of the British Civil Service make it almost impossible for a member of it to gain much personal credit for his official work, and the extent of Clarke's labours and influence at South Kensington can never be exactly estimated. He had a genius for organising exhibitions and for arranging for the effective display of art objects, and it was perhaps in these directions and as a shrewd dealer and judge of values that he was most valuable to the institution with which he was more or less directly connected for more than forty years. Perhaps he was hardly so successful in his dealings with men. The restrictions under which he was placed by the cumbersome official machinery which fettered him in his later years at South Kensington worried him greatly, and he made no secret to his many friends of the annoyance that the clerical control of the Board of Education gave to him. He was fairly popular with his own staff, but he did not possess the rare gift of inspiring his juniors with enthusiasm. There is no doubt that he was glad of the opportunity given to him at New York of organising a great museum on his own lines and with a power of absolute initiative which he never had in London, and to this desire he willingly sacrificed all his old associations. But, apart from the purely sentimental side of that sacrifice, the fact need not be overlooked that had he remained he would in a few years have been retired on a somewhat meagre pension, and that the change of office was largely to his financial advantage. He was in private life a brilliant and witty talker, with a keen relish for the unexpected point of view. And he made, and kept, many friends.

Sir Purdon Clarke married Frances Susannah, daughter of Mr. Charles Collins, and had a large family. His eldest son, Mr. Stanley Clarke, has already followed so far in his father's footsteps as to establish himself as a high authority on Indian and Central Asian art and handicraft.

ILLUSTRATIONS.

PUGIN STUDENTSHIP DRAWINGS.

WE this week illustrate some of the drawings submitted this year for the Pugin studentship by Mr. P. D. HEPWORTH, and for which he was awarded a prize of five guineas.

PREMISES, BURY STREET AND RYDER STREET.

THIS drawing, showing the design of Mr. G. THRALE JELL, was exhibited in last year's Royal Academy.

73 SOUTH AUDLEY STREET.

AS an example of the successful treatment of a narrow-fronted London house, this building by Mr. PAUL WATERHOUSE, M.A., F.R.I.B.A., is worthy of study.

DESIGN FOR STAINED GLASS.

THE original drawing by Mr. THOMAS W. CAMM, from which our illustration is taken, was exhibited in the Royal Academy last year.

THE Society of Ordained Surveyors held their thirteenth annual general meeting in Edinburgh on the 6th inst. The report of council for the past session states that during the year three new members had been admitted to the society. The modes of measurement for minor trades, after having been submitted to and approved of by the society, had been printed and circulated among the members. Copies had also been sent to the secretary of the Building Trades Exchange and others for distribution among the various contractors. The charter and the rules and regulations of the proposed Society of Chartered Surveyors of Scotland were submitted by the sub-committee at special general meetings of the society, and were finally approved, subject to the adjustment of one or two small items with the Glasgow Institute. The whole matter had now been adjusted with the Glasgow Institute, and the charter was at present in the hands of Parliamentary solicitors with the view of its being presented to the Privy Council. The treasurer's balance-sheet showed that the funds of the society at the close of the financial year amounted to 540*l.* 4*s.* 6*d.*

THE ARCHITECTURAL ASSOCIATION.

AN ordinary general meeting of the Architectural Association was held on Monday, April 3, at 18 Tufton Street, S.W., Mr. Arthur Keen, President, in the chair.

The election of Mr. J. Archibald, Finchley; Mr. S. B. K. Caulfield, Lincoln's Inn; and Mr. H. S. Davis, St. John's Wood Road, N.W., to membership was agreed to. The following additional nominations of officers for session 1911-12 were announced:—Messrs G. E. Nield, A. G. R. Mackenzie and A. G. Horsnell; also the appointment of the following scrutineers:—Messrs J. S. Cable, G. W. G. Hake, F. J. Mathews, H. A. Thomerson, A. L. Snow and J. Archibald. It was stated that a combined meeting of the Camera, Sketch and Debate Club with the Surveyors' Institution will be held on April 27; also that a visit will be paid to the Building Trades Exhibition at Olympia by invitation of Mr. H. Greville Montgomery on Saturday, April 22; and lastly, that the annual dinner will be held on May 4 at the Trocadéro Restaurant, Piccadilly. Votes of thanks were passed (1) to the Royal Institute of British Architects for its grant of 100l. towards the educational work of the A.A., and (2) to Sir Henry Tanner and H.M. Office of Works for the donation of a detailed drawing made by Mr. Phenè Spiers of Burges's Law Courts front. It was stated that the Herbert Batsford prize of five guineas given annually by Mr. Herbert Batsford for the best drawing published in the Sketch Book has been awarded to Mr. J. M. Whitelaw for the past year.

Professor SELWYN IMAGE (Slade Professor of Fine Art, Oxford) then read a paper on

Architecture in Paintings.

Let me begin by thanking you heartily for the honour you have done me in asking me to come here this evening and read you a paper. I appreciate the honour very keenly. Yet in saying this, and, as it were, in the same breath, I feel that I must offer you an apology, and throw myself to some extent on your indulgence.

When your invitation first came to me, I felt in all honesty bound somewhat to excuse myself from accepting it, not because I did not wish to accept it, but on the plain, practical ground of not being sufficiently equipped, at least upon one side, for doing reasonable justice to your subject, "Architecture in Paintings." No doubt that subject may be dealt with from more points of view than one; for instance, from the architect's point of view, or from the painter's; or, again, from the point of view of theory, or of history, and so on.

But, at any rate, be the point of view what it may, it does seem as if anybody essaying the subject ought to have much more than a surface knowledge both of the art of architecture and the art of painting. Now, of the art of architecture my practical knowledge, apart, let me say, from my appreciation, admiration, love of it, is, alas! far to seek. And so I remember I said quite frankly when your kind invitation came to me. But on receiving your rejoinder—not quite, indeed, in these words, yet virtually in them—that this did not matter—well, what was I to do? You had fairly taken the wind clean out of my sails. If, with your eyes open, you were going to be content with an architectural ignoramus, what was the poor architectural ignoramus to say but "All right!" And so here I am.

And still one word more of apology. I have but few lantern slides to show you in illustration of my remarks, which were obtained under difficult circumstances. I had to run about the other day up and down the town trying to procure a few photographs of pictures that would suit my purpose. It is always a hard matter to find at a pinch just what you want, and so it proved to be in this case. I wanted specially to find photographs of pictures, the originals of which would be known, or readily knowable, by you in our national collection. But the task was not so easy as I had fondly imagined. I did procure with some difficulty what I wanted—more or less. May I hope that you will be somewhat lenient with me when I tell you that, apart from other work, I have recently had, or still have, upon my hands nineteen fresh, separate lectures and addresses, none of which, I assure you, are more congenial to me than this one to the Architectural Association, but most of which have been, or are, more exacting on my energies and my time.

And now to our subject, "Architecture in Paintings." I suppose one may say that the treatment of architecture by painters may be divided under at least seven heads—possibly under more, if one wishes to go minutely into the matter—but these seven may perhaps serve for our immediate purpose. What are they?

First of all, there are those pictures in which architecture is dealt with purely or mainly for its own sake. I am not, of course, thinking of merely literal, topographical representations, which may be extremely valuable and interesting, and even charming, but hardly come under our notice at the moment. I am thinking of the work of considerable painters, as such, yet whose chief aim has been to show us faithfully how such-and-such buildings or groups of buildings at a given moment looked, and who were capable of doing this with a certain artistic effect, so to say, superimposed, the painting having a value as painting beyond its value as a literal transcript of fact. As types of such paintings we may take the works of the two Venetians, Canaletto, 1697-1768, and Francesco Guardi, 1712-1793. Of these two Guardi was the freer, or, I should rather say, the more flicky in his execution of the two—I should put him certainly behind Canaletto. Or, again, we might take our own English academician, David Roberts, 1796-1864.

Secondly, there are the paintings in which architecture is definitely imitated, so to say, as if part of the construction of the work the artist is literally building, if one may be allowed the expression, not with marble or stone, but with his brush and his paint. The most famous type of all such work is, of course, Michelangelo's ceiling in the Sistine Chapel, 1475-1564. In the hands of so immense and unrivalled a genius as Michelangelo, who was himself, remember, an architect, as well as a sculptor and painter, the work is a consummate success. But in lesser hands, as we all know, the attempt after this kind of architectural painting may easily be disastrous enough. Certainly the many disasters it has given rise to make one feel how no man should attempt so Herculean a task, who has not attained to our own Alfred Stevens's ideal of knowing only one art, the name of which is architecture, painting, sculpture, and all the accompanying crafts. Perhaps, in passing, you will let me note about the Sistine ceiling the splendour of its colour. When I saw it, now many years since—alas! there is little chance of my ever seeing it again—the first thing about it that struck me was this splendour of its colour. I think it must strike everybody. And yet, you know, Michelangelo, with the strange modesty of great genius, at first held back from undertaking the commission on the ground that he was not a painter.

Thirdly, there are the pictures in which the architecture, though not, as in the Sistine ceiling, deceptively imitative of actual construction—of course, in a framed painting this could not be—is yet a fundamental part of the design treated with an independent dignity, as if there, so to say, for its own sake—just as in a jewel of the fine order it is the setting that counts, not merely the stone.

In the earlier and middle Italian work especially is this treatment common and amazingly impressive. Let me give you examples of this treatment. The first, an Annunciation, by Carlo Crivelli, 1403-1493; the second, a Circumcision, by Marco Marziale, of about the same date, the exact years of his birth and death being apparently uncertain; the third, the famous Ansdei Madonna of Raphael, 1483-1520.

In Crivelli's Annunciation, indeed, the architecture is almost the picture; if the picture were not so beautiful and so marvellously executed, considering what the subject of it is, one would be inclined to complain a little of the architecture as over-dominant. It is, however, at any rate, a miracle of drawing, of sumptuous decoration, and of colour. So elaborately finished is it up to the minutest detail that I always myself stand before it aghast that one man should ever have had patience and time to accomplish it, let alone all those other numerous works Crivelli executed with equal detail and precision. Still, it is a marvellous picture rather than a great one. You feel that the peacock and the carpet, the gherkin and the apple, have interested the artist as much as the Blessed Virgin and Gabriel; and though there is no lack of proportion in the design and its execution, there is certainly a lack of proportion in the motive or idea of the picture—it is little else, all said and done, than a bit of stupendous decoration.

A nobler creation is Marco Marziale's presentment of the Circumcision. The architecture here, as in the Crivelli, is of importance for its own sake, beautiful and highly decorated, too, but it is not the whole picture, or anything like it; the incident and the figures are the thing, and the architecture sets them off duly, appropriately—it does not swamp them. You may return again and again to gloat over the decoration of the vaulted arches, with their sumptuous mosaics, and the curiously-embroidered vestments; or, say, over the dear little rough-haired dog in front; but it is the sweet, modest figure of the mother, the reverent figures of her attendants, the bent figure of the old priest so carefully

handling the child—it is these that permanently affect you. A greater picture than either of these, the work of a far greater artist, is the Madonna degli Ansdei of Raphael.

Again, here, the architecture is of the first importance, beautiful in its chaste dignity, but this time without any seductiveness of curious or rich ornament; now it is proportion and delicacy alone that make their appeal to us. Indeed, throughout the entire picture there is little enough ornament. But round the canopy of the throne and round its base runs the old Greek key pattern in gold—that amazing invention, which, in spite of its endless employment and endless vulgarisation, one never wearies of. Have you ever noticed how Raphael has drawn it in this picture? If not, notice it the next time you go to the National Gallery. He has drawn it quite “freehand,” as the saying is. The gold lining is not the same thickness throughout, the repeat is far from mathematically exact, the pattern only just manages to get itself into the space. And yet how much of the charm of this ornamentation does really depend on this free treatment. Look at it and think how much would be lost if all were mechanically, rigidly perfect! Do not misunderstand me. I am not counselling students to draw carelessly and flourish about. But when a really great draughtsman sets compasses and ruler aside, and trusts to the sensitiveness of his hand, how incomparably enchanting is the result.

And allow me yet one more word over this picture—a word about its colours. The design, of course, is not that of Raphael at his height; it is a design of the young Raphael, still obviously under the influence of Tintoretto and Perugino. There hangs not far off from it in the Gallery Perugino's famous Madonna, with St. Michael and St. Raphael leading Tobias—a picture whose colour can only, in all sobriety, be called glorious. And yet turn from it to the Ansdei. Not less rich, not less brilliant, not less potent, but with a certain subtlety of gradation and tone, a miraculous, delicate, vibrating light through and over it all that makes Perugino's painting—at least to my eyes—mechanical and—dare I venture to say it?—dull; no, dull, that's too bad a word—let us say hard or heavy. And some tell us that Raphael could be no colourist.

Fourthly, there are the pictures in which architecture is assuredly very important in the scheme of the design, and yet only important as its main accessory, as adding, that is, a certain effect of sumptuousness in the background of the main composition.

I am giving as examples of this treatment two pictures by Paul Veronese, 1528-1588. The first is the famous and magnificent Family of Darius at the Feet of Alexander after the Battle of Issus in B.C. 333. There needs, I think, no insistence upon the motive of the treatment of the architecture here; it is obvious, and it is like that in so many of Veronese's pageantry designs—the superb Marriage of Cana in Galilee, for instance, in the Louvre. As to the subject, the story runs, if I remember rightly, that on this momentous occasion the unfortunate family of Darius—Darius himself having escaped—on their introduction into the august presence of their conqueror, fell upon their knees, not before Alexander, but before his bosom friend—was it Clitus, I forget?—who was the handsomer and more imposing personage. Perhaps, from the action of the main figure, that is what Veronese depicts. I do not know. Anyhow, it is pleasant to hear that Alexander, like a real gentleman, showed no resentment at the mistake, but treated his captives, so they tell us, with the “utmost delicacy and respect.”

In The Adoration of the Magi the architecture is even more prominent or obtrusive than in the Darius picture, but it is still of the nature of an accessory. Up in the left hand corner of the design a portion of the building is ruinous and overgrown with weeds; so that, perhaps, here we are verging upon a merely picturesque accessory. I shall have a word to say on that quality of picturesqueness a little later on, so intimately associated with the representation of broken forms, the broken forms especially of buildings. But the love of picturesqueness in this sense, is, I fancy, comparatively a modern sentiment, and in this Veronese design the ruinous condition of part of the architecture may be not so much picturesque as symbolical—the pride of this world shattered and brought low before the divine Child sheltered even here, amid these stately columns, under a hastily erected shed. In a much earlier Florentine picture familiar to you all, “The Martyrdom of St. Sebastian,” by Antonio Pollaiuolo, a similar question suggests itself. Here a magnificent triumphal arch in the background is shown all broken away at its top, as if to hint, so to say, that the persecution of the Church assured the triumph and sealed the doom of the pagan authorities so cruelly, yet in vain, raging against it.

In any case, of course, not too much is to be made of this symbolism, even supposing that symbolism it is. Yet both Pollaiuolo and Veronese may well have thrown it in, a detail, by the way, in their designs, giving to them some slight additional significance for those who were curious to examine their paintings more than cursorily.

We pass on, fifthly, to those pictures in which, though the architecture is perfect and stately, it is in scale small and unobtrusive, quite carefully and even elaborately presented, yet in the distance as an incident in the further background. Two contemporary works by the famous brothers-in-law, Giovanni Bellini and Andrea Mantegna—Bellini 1428-1516, Mantegna 1431-1506—illustrate this treatment. The breadth, softness, and serenity of this “Infant Christ Asleep on the Lap of the Virgin” are wholly characteristic of Bellini; and these qualities are notable, not only in the treatment of the main figures, but in the placid movement of the little figures, too, and of the cattle in the background; and also, surely, in the disposition and lighting of the towers and castellated walls lying so peacefully up the hillside beyond them.

You may suppose that all this peacefulness and serenity are here only to be in harmony with and to emphasise the motive of this particular picture—the Infant Jesus asleep in His mother's lap. One knows, however, that these qualities characterise Bellini's work in general, so that he loses them not even when his subject neither demands their presence, nor is even quite consonant with it. Thus, for instance, in the more famous picture in the National Gallery of “The Murder of St. Peter Martyr,” there is scarcely less serenity, you may remember, than in this picture—so that one often hears passers-by commenting on this serenity of landscape and accessories as at something incongruous—it is a stumbling-block in their way. Assuredly how vastly different from that other St. Peter Martyr, Titian's masterpiece, once over the altar in the Church of SS. Giovanni e Paolo at Venice, but these many years since destroyed by fire, yet, fortunately, the design preserved for us in engravings. Here all is movement, violent movement—the tall trees swaying under the fury of a hurricane, Nature herself for the moment boisterous in horror at the foul deed being done there at their feet.

Although contemporaries, and so closely connected, from Bellini to Mantegna is a far cry. In the latter's representation of “The Agony in the Garden,” in the middle distance stretches a fair and stately group of buildings, the Holy City Jerusalem accurately and minutely delineated in her strength and pride. Although to serve but as a distant detail, Mantegna, whose love of architecture and sculpture was predominant, and in every thing that he painted his passion for precision amazing, designs and draws for us each building here with elaborate care; nothing is slurred over, or merely suggested; bit by bit the whole range of the buildings is deliberately in detail made out for us. Yet it is part of the miracle of Mantegna's work that with all his passion, as I have ventured to call it, for precision, and his love of detail from one corner to the other of his pictures, we are not distracted, as in Crivelli, by a multiplicity of adornments; but everything holds its place in justly calculated relation of subordination of precedence, the central motive of the design remaining paramount in its human interest, and in its dignity and largeness of effect.

This is so; and, indeed, without this largeness of style and passionate curiosity in humanity—look for an illustration of this latter at the figures of the three slumbering apostles in this picture—Mantegna's exalted position in art would not be what it is; no, not for all his learning, and, in some sense, his unrivalled draughtsmanship. Yet I cannot find it in me to let this mention of him pass without a word commending to you the study of his detail, the detail especially of his foliage and flowers. Even in this awful and harrowing subject of Christ's Agony he cannot resist setting in the foreground these little nameless weeds. And how exquisitely designed they are! How always exquisitely designed, his hand never failing! I sometimes think nobody has ever drawn plants and flowers and fruits quite with Mantegna's union of grace and strength. Botticelli has the grace, but not the strength, Leonardo has the strength, but yet even he hardly the grace. But I refrain, for this you will be telling me has nothing to do with architecture.

We have so far, in the pictures I have mentioned, seen architecture treated by the painters as a thing so dignified and important that even when it enters into the design only as an accessory and on a small scale in the background no looseness or liberties are to be allowed in the delineation of it. Perhaps it was not until a later age, when, for reasons

which we cannot here stay to inquire into, the enjoyment of landscape, and the representation of it for its own sake, began to prevail, that any other pictorial treatment of the mother of arts was possible, or even thought of.

That Titian, 1477-1576, was one of the first, or the first, of the great masters who thus dealt with landscape in a serious manner for its own sake is a commonplace familiar to every student; and there are many splendid landscape designs and studies of his extant to bear out the statement. I am not showing you any one of these on the screen, because, of course, landscape is not our subject this evening; but in the famous picture-piece of his, the "Noli me tangere," in the National Gallery, I think you will feel that it is not mere fancifulness to recognise in the treatment of the buildings in the right-hand upper corner of the background, at any rate, the stirring of a different feeling towards the pictorial treatment of architecture different even to when the buildings have been background accessories on a small scale, as in the Bellini and the Mantegna.

Now, what is the change that has come or is coming about? At its beginning, and here we are at its beginning, it is naturally something easier to feel than to analyse and put formally into words. But may we not say that evidently Titian's concern with the group of buildings in this picture is simply as to their providing him with a dark mass of something in the distance against the sky to serve as a useful mass in the balance of his design? That it is a mass, not of rocks or trees, but of human habitations is natural, because, as a rule, even a pure landscapist likes to get into his scene some hint of humanity—if I may say so, it vitalizes and warms up the scene. But, apart from this, the mass is thought of simply as a mass, the interest in the buildings as buildings is negligible. That is not so with Bellini or Mantegna; but, I venture to say, in this Titian it is. To put my point into general words, we are coming now to a period, to a phase of thought and feeling, in which the painter will use architecture purely for pictorial effect, as a mere item in his design providing some required mass, or space, of light or darkness; the actual forms and details of the architecture will, in consequence, comparatively matter little to him, and their delineation as such will be often vague, or even, in a certain sense, careless. The point, of course, requires more studied and accurate working out and formulating than at the moment I can stay to give it. Still, I think, a real point it is, and I hope I may have made it serviceably plain to you for at least our immediate purpose.

Fifty or sixty years after Titian's death, shall we call it for distinction the purely pictorial attitude towards the employment of architecture has become common enough. This is clearly emphasised in a grand landscape by Gaspar Poussin, 1613-1675, in which it is obvious that the interest is not in any sense in the buildings of the distant town as buildings, but only as they afford an elongated stretch of light balancing the carefully-designed lines and masses of the landscape, charmingly illuminating and vivifying it. The more pure landscape appeals to painters, and the emotions it is capable of arousing are insisted on as the subject of their pictures, the more will this treatment of architecture in their compositions assert itself. Indeed, it is imperative, for obviously it would militate against the effect and impression they are seeking after were they to introduce their architecture more elaborately delineated; it would destroy breadth by focussing the attention on details of construction in a single part of their design, just as in another way it would be impossible in such a landscape as that of Poussin's to treat the foliage leaf by leaf as in Bellini's Peter Martyr, or the foreground of Mantegna's Agony in the Garden, with its weeds, without disaster to its entire scheme and purpose.

You will not, of course, understand me as saying that this generalised and summary method of treating landscape is the only proper and fine method. It may easily degenerate, and, as a matter of fact, degenerate it did, into academic formalism, an almost mechanical application of certain empty conventions of composition. Yet its principles, intelligently apprehended, and applied not mechanically, are capable of what impressive and dignified results? The magnificent Poussin which I commend to you as an illustration of it I spent a long while on Saturday last trying to find in the National Gallery, that I might refresh my memory with a sight of the actual thing; but I searched in vain. To my thinking it is one of the greatest landscapes in our possession—by far the greatest of all the Poussins, and there are several—but at the moment, apparently, it is not rehung on the walls. But when it is, go and look at it; it is worth a world of study, and, amongst other excellent qualities, for

bringing home to us the meaning of scholarly and superb design.

And now we come to the seventh, and last, heading of our subject, as I have mapped it out for the purpose of this evening's paper. Under it I am showing you, first, a picture by Albert Cuyp, 1620-1691—a Ruined Castle in a Lake.

Here, certainly, there is architecture prominent enough; no mere accessory of the general design for the sake of symbolism or play of massed light and dark; the building is itself the thing. Yes, but what is the artist's interest in it? The answer springs to our lips at once—he is interested in the building just for its picturesqueness. He would not have felt the same interest in it supposing the castle were standing in its first pride of completeness and unshattered strength, alert with busy life within and around; but to-day it is deserted, its walls broken and crumbling; over them weeds may now clamber unmolested, and hooting owls circle by night. And the charm of all this ruggedness and decay it is that arrests one hauntingly. Or look at another picture, this time by Ruysdael, 1628-1682, of a motive very similar, the castle here yet more utterly a wreck, just one tottering, crumbling tower and wall of it left, all overgrown at their base with tangled bushes, its design and plan perished out of sight. Or, again, at a landscape of Hobbema's, 1638-1709, a design of trees with cottages nestled among them, such as he loved to paint. It is true the cottages are not in ruins, busy country-folk inhabit them; but they are old and weather-beaten, their timbers are warped, and the lines of their roofs and walls have sunk into quaint irregularities. Smarten them up, make their crooked places straight and their rough places plain—and then? And then Hobbema will say to you, "My friend, you've left me nothing worth painting!"

Well, I do not think I am putting the matter unfairly, over-colouring it for effect; and assuredly it brings home to us how long a way we have travelled from those elder Italians, with their love of order, stateliness, precision; and have passed not merely through many years, but are come out, as it were, at last into a new and vastly different world of artistic conception and enjoyment.

Now all this rugged brokenness, this indecision and irregularity of mass and form, we have learned to speak of as picturesqueness, and to be strangely attracted to and impressed by it. The love of it, as I have already said, is comparatively a modern sentiment; and, perhaps, it could only have arisen in times when men were settling down into a sense of some assured security and physical comfort, and were growing to look upon nature, not as a world of lurking danger, but rather of friendliness and charm. And as this feeling grew, there would grow with it the desire to depict natural scenes, and the sense that, whenever into such scenes were introduced human habitations and signs of human toil, these must in their forms be congruous with the lines and masses and colours of surrounding nature—these, which are never rigid, hard, monotonous, but endlessly and inextricably diversified. And since, as in the elder days, when man and man's work were the main motives of art, the presentment of nature was conformed to their orderliness and precision; so, as nature began to assert herself as for her own sake a motive of his art, the presentment of man and his work, this in its turn was now accommodated to nature, to her infinite variety of form, and her shifting play of colour and light. And so, I think, you will see that our modern love of what we call picturesqueness in the treatment of architecture has a reason and justification in the order of things, and, though with most of us nowadays purely instinctive, it is yet easily capable of analysis, supposing we are in the mood for analysing. It may often lead us, of course, into a degenerate production of merely trivial prettiness, and equally, of course, there would go to its complete analysis several other elements beyond that which I have insisted on. But I have said enough for the moment, perhaps, considering the immediate subject before us this evening—enough, that is, to assure you on behalf of us painters that we are not merely impudent triflers with the supreme art of architecture when sometimes we do seem to approach it a little jauntily at our ease, with neither sufficient knowledge of its principles, nor a becoming reverence for its dignity.

I have endeavoured, gentlemen, in a quite cursory and very imperfect manner, to show you a number of ways in which architecture has been dealt with by various great painters of various times and schools, and this, at least, you hardly deny, that the ways are very diverse. Here, then, as in almost everything else, there is no one law or method to be laid down and universally applied with rigour, but according to the circumstances of the case will be the

treatment adopted; and every reasonable treatment will have its appropriateness, and so its justification and infinite charm. But let us remember we all have our limitations, limitations imposed upon us not only by our natural instincts or tastes, but by our education, and by the character of our work in the world; and in judging of other departments of work than our own, though to judge rightly demands that we should free ourselves in some measure from the restraint of our limitations, to do so is often difficult and distasteful. "The first duty of a critic," it has been said, "is to get himself out of the way"; and though that is not the final counsel as regards criticism, the first it assuredly is. And so, when any work of art is submitted to us, and it is at first sight strange and unacceptable, and runs counter to our innate prejudice or prejudices induced by our professional training, we do foolishly if we dismiss it in petulance with an "It's all wrong, and I can't stand it!" or a "Yes, but that's not my style, and I see nothing in it!" But in quite a different temper we have, if we want to stand on the side of the angels, to put three questions to ourselves, and try to answer them quietly. First, what has the artist aimed at? Secondly, has he attained his aim? Thirdly, was it an aim worth attaining? And, though our first off-hand judgment, prompted by sheer instinct, may prove also our considered judgment, and we may have, after all, to denounce the work right out, it is only because our criticism has passed through this disciplinary process before it utters itself that it is worth listening to, or finally will count.

Mr. CHRISTOPHER W. WHALL formally proposed a vote of thanks to Professor Image for his interesting paper.

Mr. GERALD C. HORSLEY, in seconding this, said it was impossible to follow the Professor into the many sides in which he dealt with the subject in his delightful paper. There was perhaps one side which was particularly interesting to them as architects, and that was in connection with the early and middle Italian examples. These spoke eloquently of the sympathy existing between the painters and architects of that time. In the case of Raphael's *Ansdei Madonna* in the National Gallery the connection between the painter and Bramante was clear. Again, the pictures of Botticelli are full of architectural treatment which brings to one's mind the work of Brunelleschi. Titian and Veronese recall the sympathy between Venetian painters and Venetian architects. This side of the paper, moreover, brings to one's mind the advisability of young architects cultivating as far as possible the society of their fellow-craftsmen of all kinds. If they could meet each other more often the architects' work would gain in interest and vitality, just as theirs would reflect the artistic sympathy which must arise when two crafts meet together. It was a pity that the Royal Academy did not do more in this direction. They welcomed the presence among them of Professor Image as a painter.

Mr. A. T. BOLTON expressed his pleasure that Professor Selwyn Image had selected the National Gallery as the theatre of his illustrations for that night's paper. In that Gallery the nation possessed an extraordinarily interesting collection, and it was very advisable for architectural students to spend all the time they could spare there. The rooms were most admirably arranged so as to give the visitor passing through them a good idea of the development of painting in a single stroll. It is impossible to fail to be struck by the enormous development which has taken place in architecture. Personally he would like to put the development of landscape further back than Professor Image had done, because it seemed as if in two cartoons by Raphael—one showing Christ charging St. Peter with the custody of the sheep and the other St. Peter fishing—one could see its real origin. The interesting point about the work of Crivelli was that it showed painters to be still interested in architectural design and detail; for the detail of Crivelli does not represent any actual building, but the personal design of the painter. Architects nowadays felt that painters have lost touch with them and would put into their pictures most horrible architectural detail—for the same reason as the interior of Millais' house was said to be a miracle of bad taste. This position might be attributed to a speech by Lord Leighton when he pointed out on one occasion that the modern painter looks back to that realm in which Rembrandt was king, *i.e.*, he is interested in light and atmosphere. That was the frame of mind which architects required to understand. Mr. Bolton said one of the most delightful painters of the present day being engaged on a picture a friend took the trouble of setting up the architectural detail for him, but the friend had the chagrin of finding his work was ignored, and the painter made "a mess of it." Painters have their own point of view. An architect naturally studies these things, and argues that

if the painting claims to be decorative then he is directly concerned with it. Veronese was a friend of Palladio; and that combination was as powerful as that of Bramante and Michel Angelo. It must be, continued Mr. Bolton, a most delightful task to come into contact, as Professor Selwyn Image did, with the youth of the governing classes of this country and instil into them the knowledge that there is such a thing as art. He would like to ask the Professor what he meant to do in regard to teaching architecture at Oxford. Oxford seemed in itself a school of architecture, and that art might almost be taught by perambulating the streets and studying the work of all epochs. Possibly the A.A. might be able to help the Slade Professor. It seemed to him that Professor Image might make on a small scale some index of the various architectural drawings, confining himself to Oxford buildings. It might later be possible to get these young fellows (who at present do not take any interest in the subject) to see what they have around them.

Mr. A. B. K. COOK mentioned that when he was at Oxford he was one of about six undergraduates who went to attend the lectures of the then Slade Professor. There were certainly very very few to admire the city's architecture whether Gothic or Classic. The value of architecture in painting is immense, even on the painter himself. In Decorated and Perpendicular stained glass work the architectural canopies set off the figures most advantageously. The same duty was performed by some of the very elaborate gilt frames around the early Italian pictures. The common introduction of ruins by a very large number of Renaissance artists was not done so much perhaps with a view to architectural picturesqueness, but because interest was at the time growing in Classic architecture, and most of this happened to lie in ruins. The effects of this fashion were to be deprecated, because it aroused a misguided admiration for old work. The drawing made by Mr. John S. Sargent, R.A., of the church of Santa Maria della Salute, which was shown last year at the new English Art Gallery, and is now at the Johannesburg Gallery, was, said Mr. Cook, one of the most beautiful things he had seen. Mr. Charles Sims, A.R.A., was another modern English painter with a right feeling for architecture. The colossal scale of the architecture in some pictures, such as Turner's, must always make them interesting.

Mr. ARTHUR KEEN, in putting the vote of thanks, remarked that there was a sense of fitness in Professor Selwyn Image coming to give an address, because his great Slade predecessor, Professor Ruskin, came to the Architectural Association and read a paper. The paintings which had just been discussed had perhaps their greatest interest for them as throwing a light on the many-sided genius of their authors, who could turn their hands to anything. The earlier examples given of architecture in paintings were clearly designs by the painters themselves. The later ones seemed more like transcripts from existing buildings and towns. There would probably be some light thrown on this subject at their next meeting, when Professor Beresford Pite will lecture on Alberti and Bramante. The association of painters, architects, and other artists one with another, to which reference had been made by Mr. Horsley, would be a very fine thing if it could be accomplished. As to the paper, there could be no question that Professor Image had arranged his subject in such a masterly way, and had expressed himself in such a beautiful manner, that it was a pleasure to listen to it from that point of view alone.

The vote of thanks was then put to the meeting and carried with acclamation.

Professor SELWYN IMAGE, in responding, said he had come to the meeting trembling, because his practical knowledge of architecture was nil. With regard to the difficulties of the position of a Slade Professor at Oxford, they were enormous. They were largely owing to the fact that no sense exists there or in any similar body that art is a living concern. He was fully alive to the primary importance of architecture, and considered that it was better they should have Winchester Cathedral preserved than to possess Rembrandt's Mill. He would make no promises as to reforms except to say that he would do his best.

THE "OLD" WATER-COLOUR SOCIETY.

THERE is a plentiful variety both in matter and manner at the Summer Exhibition of the Royal Society of Painters in Water-Colours, which has just been opened in Pall Mall. The contributors include many of the most sought-after younger painters and also some representatives of those who, having already established their reputation, appear to prefer precedent to experiment. Admirers of either class can visit the hundred and fifty-sixth exhibition

in the confident expectation of finding many attractive pictures.

The ever-industrious President, Sir Ernest A. Waterlow, R.A., sends nine works which are typical of his soothing dignified manner. They are unobtrusive landscapes of a kind which would give a purchaser pleasure in whatever mood he might happen to be. Of the three works by Mr. Claude A. Shepperson we prefer "Pas de deux" (5), which is wholly delightful in its quaintness, its conscious artificiality, and its generous colour. Mr. J. C. Dollman has boldly tackled a big subject in the "Thirty Pieces of Silver;" the outcast, Judas, is shown seated alone in a rocky place overcome by remorse. The pervading air of tragedy might assuredly have been even further heightened without exceeding proper limits. Mr. Dollman has chosen straightforward English scenes for his other contributions. An unusually large number of works come from Mr. Walter Crane, who shows himself as much at home in portraying light and shade in Egypt as in showing the wind-cloud effects of France. He has only one purely decorative subject; and it will scarcely be claimed that "A Fire-Dance" will increase his very high reputation, for there seems to be a lack of spontaneity about it. There is quite a different feeling in his two subjects from Montreuil-sur-Mer or "The White Mantle of the Prophet," which is one of five charming Eastern scenes. Mr. Albert Goodwin has presumably become so saturated with Oriental colouring that he converts the skies of "Dartmoor" and "Pevensey" into something not unlike Oriental richness. However, he had no need to restrain himself in "The Citadel, Cairo."

For most visitors to the exhibition the central attraction will be the two contributions by Mr. John S. Sargent, R.A. It was reported some time back that this amazing artist had forsworn portraiture, and was to devote himself to other kinds of painting. Though this is not exactly contradicted by Nos. 31 or 77, yet both hint at the possibility of a return to that lucrative form of art. The first is called "Sketching," and shows two elderly ladies, one of whom is engaged before an easel. The figures are portrayed with a most remarkable vividness. Mr. Sargent stopped at the crucial moment when to have proceeded would only have been mere elaboration of detail, for he had caught all the essentials. His other picture—"The Garden Wall"—is more conventionally correct and less inspiring than the one just dealt with. From anyone else it would be received as a splendid performance, for the balance of the two figures seated before the sunlit wall is most pleasing. Another notable contributor is Mr. Charles Sims, A.R.A., who sent two of his delightfully airy fairy pictures. The obvious fault to be found with them is that they make rather too severe a call on the average spectator's imagination. For example, it is by no means easy to understand "Puck in the Fountain" (55), though that fact will not hinder its recognition as a fine work or the enjoyment of its freshness of colouring. Mrs. Laura Knight has her following, and they will not be slow to admire "Wind and Sun" (187), which represents her here. It is entirely modern in its vigorous treatment.

Eight severely architectural subjects come from Mr. T. M. Rooke. His "Interior—Cremona Cathedral" (109) is a little startling with its bizarre display of tapestries, and suggests that the oft-quoted "blaze of colour" may have been more garish than beautiful in some instances. Mr. Robert Anning Bell probably had no idea of painting No. 86 as an altar-piece, but none the less it would serve for one admirably if a suitable architectural frame were provided.

The above are a few of the pictures which arrest one's attention. The Hanging Committee have been careful to avoid overcrowding, though the small size of practically all the works enables well over two hundred to be placed upon the walls. A visitor will find little to blame and much to praise in the exhibition.

NOTTINGHAM ARCHITECTURAL SOCIETY.

THE first visit of the session took place on Monday, March 27, the building being the new Territorial Headquarters on Derby Road, Nottingham, now being erected from the designs of Messrs. Brewill & Baily, the architects.

Major Brewill, F.R.I.E.A., who had invited the Society, met the party and explained the plans and general arrangements, and then conducted the visitors over the portion now constructed, pointing out the various features and methods of construction.

The building is to be the headquarters of the whole of the local branches of the Territorials, and comprises separate suites of offices for the different sections, large military

stores, a large hall to house the gun-carriages, &c., a large drill hall over the latter, stables and coach-houses, and other requirements of the War Office.

The ground floor, which forms the store for the gun-carriages, is about 100 feet long by 80 feet wide, and it was essential that as few columns as possible should obstruct the floor space. The architects have therefore adopted the Hennebique system of reinforced concrete columns and beams to carry the floor of the drill hall above, which is also constructed on the same system in reinforced concrete. Major Brewill explained the method of arranging the steel bars and the centring; and at the close of the visit Mr. Harry Gill thanked Major Brewill on behalf of those present for his kindness in arranging such an interesting visit.

Among those present were Messrs. W. R. Gleave, S. Walker, F. W. Gregory, W. Hickson and the Hon. Secretary, Mr. F. M. Royle.

On Tuesday, March 28, the Society concluded their winter session with a smoking concert at Calvert's Café, when all the designs sent in for competition in the Designing Club and the measured drawings submitted for competition were exhibited.

There was a capital attendance. During the inspection of the drawings the Cecilia Orchestra, under the leadership of Miss Connie Beaverstock, rendered a number of delightful selections. After an adjournment for refreshments, Mr. S. G. Walker, assisted by Messrs. E. H. Heazell, C. Howell, W. B. Johns and W. Wales, delighted all present with their vocal efforts.

In presenting the prizes, Mr. R. Evans, jun., the President, remarked that he had no hesitation in saying that the work submitted to the Nottingham Society by Nottingham students was quite equal to the best submitted to the Royal Institute in London. This year the work was of such excellence that the Society had increased the value of two of the prizes, and personally he wished he could give every student a prize, but he was only allowed to award the following:—

For the best set of designs: 1, Mr. W. L. B. Leech; 2, Mr. T. C. Howitt. For the measured drawings: 1, Mr. F. E. Collington, for a beautifully drawn set of Hawton Church; 2, Mr. T. H. Whittaker, for drawings of the Chapter-House at Southwell; 3, Mr. T. C. Howitt, for drawings of the old School-House at Risley.

Mr. Evans announced that the Council had highly commended the drawings of Wingfield Manor, submitted by Mr. E. B. Crossland, and those of the York Gate on the Thames Embankment by Mr. G. M. Eaton.

The annual meeting is to be held on April 4, and an inspection of the water-colours at the Castle Art Museum takes place on April 7.

THE ILLUMINATING ENGINEERING SOCIETY.

(Continued from last week.)

THE LIGHTING OF SCHOOLS.

THE question of cost is not one I need discuss. We still require a carefully worked out comparison between the best form of gas illumination and the best form of metal filament electric illumination. There are such returns, but what I suggest is desirable is such a return by a public authority based upon the working of two similarly situated schools over a long period. Further, as a corollary to these returns, we ought to have a return of the relative cost of upkeep in decorations in these two schools.

The recent rapid development of the metallic filament lamp has somewhat disordered our arrangements for electric lighting in homes and schools. Just before these lamps appeared in an effective form lighting companies and authorities in many districts had raised the voltages often very considerably, e.g., in one district of London the voltage was raised from 100 to 240 continuous current. No one remarked the change so long as carbon lamps were in use, but when the metallic lamp became desirable the evil of the high voltage was manifest. Lighting—except for certain special purposes, e.g., lighthouses, public buildings, and shops—needs a uniform distribution of moderately powerful lights. With high voltages we get an uneven distribution of intensely powerful lights; the effect is bad in every way. The blackness of the shadows is intensified and the eyes are injuriously fatigued by the blaze of powerful lamps. To permit educationalists to make the best use of the recent invaluable advances in electrical lighting electricians will



THIS oak lectern was given by the parishioners of Postwick, Norfolk, in memory of their late rector, the Rev. Canon E. S. Medley, son of a former Bishop of Fredericton and Metropolitan of Canada. Mr. H. Watson has well realised the design of Mr. E. Swinfen Harris, F.R.I.B.A. (an old friend of the late rector). Messrs. Gawthorpe, of London, supplied the small brass inserted in the book-board.

need to arrange for low voltages in supply, say not exceeding twenty-five volts, or else evolve a lamp of no higher candle-power than the old sixteen carbon which will be inexpensive and not unduly fragile. The reduction of voltages seems to me the more desirable aim, for with low voltages we can provide satisfactory reflectors of reasonable size and weight; whereas the large long lamps of present usage are particularly unsatisfactory to deal with. This is a matter of great importance, for efficient reflectors are required for metallic lamps not only to satisfactorily distribute the light, but also to reduce by contrast the high specific intensity of the glowing filament.

I should like to be able to get you to compare the lighting effects in two hospitals I work at; in one the voltage has been reduced to twenty-five, and with metallic lamps the effect is perfect in flexibility and softness; in the other a 240 continuous current is irreducible, and the lighting is hard, fatiguing, and wasteful.

As regards the value of reflectors for glow-lamps the following experiments are of interest. A sixteen c.-p. carbon filament lamp was used with 100 volts of the Strand supply. The lamp was hanging in a class-room chosen for its convenience, and the measurements made in a plane four feet below the level of the lamp:—

Shade.	Below lamp.	1 yard.	2 yards.	3 yards.	4 yards
None	5 m. c.	+3	+1	1	1
110 deg.					
3½ inches deep	20	9	5	3	1
80 deg.					
5 inches deep	30	9	5	2	1

Two sorts of opal shades were in use in the schools; one subtended 110 degrees in the sides, and had a vertical depth of 3½ inch. This shade did not cover the lamp, and the incandescent filament was exposed to the teacher's eyes. The other shade had sides subtending an angle of eighty degrees, and with a vertical depth of five inches; this shade completely screened the lamp from the teacher, and was the one to be preferred for class-room purposes, as the light below was also increased by one-third. Glow-lamps

throw an image of the filaments. If a sheet of white paper be held under the lamp at the distance of a yard, four bright stars, each with a bright tail outwards, will be seen marking the corners of a square of one foot side. At the distance of two yards the separation of the points is two feet. The better the reflector over the lamp, the less noticeable are these lines. Ground glass bulbs obscure the lines completely, but frosting the glass reduces the illumination by twenty-five to thirty per cent.

The distribution of the lamps should follow the lines indicated for the gas pendants. Beginning at the left hand of the children's portion of the class-room, a lamp should be hung over the centre of the first dual desk and from there across the breadth of the room at distances of not less than six feet, and not more than nine feet for sixteen c.-p. lamps with ninety degree shades. With gas the fewest possible number of burners is desirable, for the more burners the worse the atmosphere; but with electricity, the points of light may with advantage be more generously disposed, and a cross room spacing of six feet might be uniformly arranged. A second row of lamps should be hung in the same relation over the third row of desks. The lamps, as usually hung, err in being hung too far back; for instance, over a back row of desks, with the idea of their illuminating the desks in front, which they, however, fail to do when the children are present in their seats. The use of a front row of lamps with tilting shades, to light the blackboard in the teachers' section of the room, or desks in the children's portion, fails to serve both purposes in practice. It would be better to use a lamp to illuminate the desk and blackboard, and completely shaded from the children's portion of the room.

Refraction of Light.—There are on the market now a number of excellent devices in globes and shades which aim at the bending of the light rays by prismatic glass. Examples of these were experimented with, e.g., prismatic bowls for gas and Holophane for electric light. The prismatic bowl is most satisfactory, particularly when a flat opal sheet rested upon the open mouth of the bowl. The Holophane productions are very satisfactory with electric light, and

have been strongly recommended for school use by American writers.

Indirect illumination by reflection has been highly recommended as affording the most perfect and natural mode of illumination. One reads of its adoption in some of the newer German schools. By this method powerful lights, usually arc-lamps, are hung from the ceiling with metal reflectors below them, the light is thrown up on to the white ceiling or to special reflectors, and reflected as a delightfully uniform and soft radiance over the whole room. The effect is not unlike daylight of modified brilliance, and it is largely and most successfully employed in shops and showrooms where deep shadows of direct light would be destructive of the general effect of mass and colour. I have also a very favourable impression of its use in museums. Of its use in work-rooms, where continuous and detailed work at the desk is required, my experience is unfavourable. The system was adopted in the New Anatomical Laboratories of Cambridge University some fifteen years ago, but it had to be superseded by the direct glow-lamp illumination.

In conclusion, it may be thought that no review of school lighting will be complete without a reference to the effect of certain rays upon sight. The harmful effects of ultra-violet rays have been made much of in quite recent months; already the literature of the subject is great. I should like to refer you to the work of Lieutenant-Colonel Pisani, I.M.S., presented to the London meeting of the British Medical Association in 1910. He dealt with the incidence and distribution of cataract in India, and with the possible causes that might account for the striking inequality of its distribution. The conclusion of his examination into the several possible causes was to wholly discount the influence of ultra-violet rays, for these rays are most abundant in the light of mountainous regions, and there cataract is least prevalent. It would appear from these and other researches that what we most need to trouble about is the provision of a sufficient and satisfactorily distributed light, and these ends are within our grasp.

The President said there was a communication from their esteemed member, Dr. Ettles, who had been prevented from attending the meeting, and he would ask the Hon. Secretary to read it.

Dr. Ettles said the first school hygienist was an English oculist named James Ware, who in 1813 showed that short sight and excessive bookwork were related as effect and cause. The real awakening to the necessity of proper surroundings during childhood was due to Professor Cohn of Breslau, as was mentioned by Dr. Kerr. We were constantly told that the refraction of the juvenile eye was hypermetropic. This idea seemed to be based on the fact that the axis of the eye was shorter than in the normal adult eye. He had very often examined under atropine the refractions of healthy children, and had found no hypermetropia in normal eyes. The facts of the case, as he understood them, were that the crystalline lens in infancy was much more spherical than it was in the developed eye. There was a constant ratio between increased lens curvature and shorter axial length, which made the eye normal, and he submitted that the accepted view that all infant eyes were hypermetropic was only a general error. Then we had the equally common statement that there was a progressive development from hypermetropia via normal vision to short sight. Here again he submitted that observed facts clash with the theory. By far the greater number of eyes developing myopia did so by the astigmatic route; and at no period of the child's history had we a condition of neutralisation with temporarily perfect sight in those cases which become short-sighted. He entirely coincided with Dr. Kerr's views on the question of daylight illumination. There was, however, one amplification he would make, and that was on the influence of wrongly-directed daylight on posture. If one looked at a class seated in a room with the light coming from behind, one could not help being struck with the contorted efforts of the scholars to keep their body shadows off the book. It must have had an evil effect on the growing spine to have that faulty attitude renewed day by day. As to artificial illumination, he was very strongly in favour of shaded and inverted arcs. The ceilings and walls could not be too white or bright, although they ought not to shine, because no artificial light could be lighter than full daylight. The source of illumination should never be visible to the workers in a class; what must be aimed at was plenty of diffused light. It was not really essential that the inverted light should be an arc lamp, but in his opinion that gave the most effective solution of the problem. The inverted arc should be placed to one side of the room, that is to say, to the left of the scholars, so that the shadows might be as nearly as possible similar to those obtaining under daylight

conditions. Arising out of this question of illumination, there was an important point. Ideal surroundings might be arranged for the children while at school, but how were we to combat the bad surroundings at home? The best way would be to abolish home lessons altogether, otherwise, if tasks were set, children read by firelight, by any light, and sometimes almost no light, and the harm done at home would negative the thoughtful care of those having charge of them at school, as well as bring into undeserved criticism the use of the precautions they had taken.

The President said they had had three communications from what might be termed the medical point of view. There were a number of gentlemen present who were prepared to speak from other points of view, and in this connection he wished to mention how extremely indebted the Society was to find that the invitation which had been addressed to other bodies had been responded to. They had several representatives of the Association of Technical Institutions, including the heads of several of them; there were representatives of the Association of Medical Officers of Schools, and one representative at least from the London Teachers' Association, and by no means least, although he named them last, there were several officials of the London County Council from other departments than the actual Education Department. There were also two or three medical gentlemen present whom they would be pleased to hear if there were time, on the more specially medical aspects of the case. But they had something else; in fact, they had an *embarrass des riches*. Their indefatigable Hon. Secretary and his assistant had, on their own hook, so to speak, obtained permission from various bodies to examine the lighting of a number of schools, and he would first of all ask one of them to give the result of their investigations.

Mr. J. S. Dow (assistant hon. secretary) said that at the suggestion of Mr. Gaster, he had visited a number of schools in London, and had to express his great indebtedness to Dr. Kerr, Mr. Fitzmaurice, the chief engineer, and Mr. Baker, the electrical engineer to the London County Council, for granting the facilities. He believed it was intended to present a more comprehensive report dealing with various schools and colleges. Therefore, he would only make a brief reference to one or two schools which he had the privilege of visiting. He aimed chiefly at measuring the artificial light, but he was interested to find that in every class-room and lecture theatre that he visited the windows were arranged on the left-hand as suggested by Dr. Kerr. On the other hand, window lighting from one side of the room only had the defect that it was the cause of the daylight varying in a perfectly amazing way, and there was the danger of the children furthest from the windows having a very poor light indeed, whilst the effect would not be noticeable to the teacher. For instance, in a recent visit to the Birkbeck Institute, the illumination on the desks near the window at eleven o'clock in the morning was thirty foot-candles, whilst on most of the remaining desks it was down to half a foot-candle, which was too little. He was informed that artificial light was almost invariably used. This was a case of the greater portion of one side of the rooms being windows.

At the Haverstock Hill School the artificial lighting on the desks varied from about 2.5 to 2 foot-candles, but the daylight illumination at the moment he was there, late in the afternoon, varied from 2.6 to 0.4. The artificial illumination was used to supplement the daylight in certain portions of the room, but the combination of artificial and natural light was not always pleasant for reading purposes. Electric light was used. The artificial lighting of the blackboard was about $3\frac{1}{2}$ foot-candles. With the shade used it was almost impossible for the children to see anything of the lamp, and the general result was a very uniform illumination.

Another school which he had visited was the Charing Cross Road School, where naked carbon filament lamps were used, resulting in the watts per square foot being large, from 1 to 1.1. If metal filament lamps were substituted, this could easily be cut down, and yet get a better light. In the cookery room, the lights were placed quite irrespective of the tables, so that the illumination on the dressers was very feeble, about 0.2 or 0.1. There was a fairly good light over the sink, and over the desks the illumination was about 1.5, but the lamps could all be seen by the students, and there was also the danger of the teacher's head getting in the way. At the demonstration table, where the lights should probably be better than anywhere in the room, the illumination was only about 0.8 foot-candle. In the laundry room, also, the lights were arranged pretty well irrespective of the tables, but the illumination of the gangways, from 1.8 to 2.8, was fairly good. But in the other part of the room where the sink and mangle were situated, there was hardly any light at all. The

blackboard illumination was only about 0.5 foot-candle, and even at short distances it was not easy to see the chalk marks. With the grey backgrounds of some blackboards it was really necessary to have a higher illumination than was necessary for reading in some cases.

At the Richard Street (Islington) School the arrangement of the gas lights was very similar to the electric lighting in the other schools he had visited, and the illumination was also of the same order. In one class-room there were $3\frac{1}{2}$ foot-candles on the blackboard, without a shade, and some improvements were possible by the use of shades. Mr. Dow then showed some figures obtained from a German source, the illumination being expressed in "lux," which is about one-tenth of a foot-candle. Generally, the foot-candles were considerably higher in the German schools than in this country, going up to 80 lux. Figures were given of schools lighted by inverted arc lamps, high pressure and ordinary gas. He thought these figures demonstrated that more research into scientific illumination had been carried out on the Continent than in England.

He next dealt with the Arts and Crafts Schools of the London County Council, where a different order of illumination was required owing to the different character of the work. The conditions at these schools struck him as favourable in many ways. He met no single case in which the lamp filament could be seen. In the majority of rooms the illumination was from 4 to 8 foot-candles, but in the jewellers' room, where they had the water lens, it was possible to go up to from 18 to 28 foot-candles on the one little bright spot.

The interesting fact in connection with all these results was that there seemed to be some sort of agreement that 2 foot-candles was the minimum for desks, and it did not seem a difficult matter to prescribe this as a minimum, although for certain classes of work, such as sewing, shorthand, and music, a higher figure than that was required. Complaints had come from some of the rooms given up to these subjects, and it was found that the illumination did not exceed 2 foot-candles. A difficulty arose where rooms were used for different purposes, but when they were used for only one purpose, then a standard should be prescribed.

OUR CONTEMPORARIES FROM OVERSEAS.

THE American Architect (New York) illustrates a number of competitive designs, being those for a municipal building for Hartford, Connecticut; for a building for the Department of Justice, Washington; for a Confederate Memorial, Richmond, Virginia; a series of drawings of the Winnipeg branch of the Bank of Montreal, of which the firm of Messrs. McKim, Mead & White are the architects, is also given.

Berliner Architekturwelt (Berlin).—The principal contents this month are competition designs for the artistic layout of the Rüdeshheimer Platz, Berlin, including the first premiated one by Heinrich Berg & H. von Hoven; a church and parsonage in the Nikolassee suburb by Erich Blunck; two picturesque villas in Dahlem-Grunewald, and a premiated design for the Bismarck Memorial at Bingen by E. Schütze, Otto Kohtz, and Rudolf Kohtz.

La Construction Moderne (Paris) illustrates a typical modern French country house at Pont Saint-Esprit by Mons. Baussan.

Het Huis (Amsterdam) continues the description of Old Zutphen commenced last month, and also contains an interesting article on the "Boompje" at Amsterdam. Both of these are fully illustrated.

Engineering Record (New York) contains an account of the use of steel piles formed of pipes filled with reinforced concrete in the foundation for a seven-storey brewery at New York. The present use of bituminous materials in American roadwork is the subject of a paper by Professor Arthur H. Blanchard, read before the American Association for the Advancement of Science.

The **Architectural Record** (New York) has two illustrated articles of more than usual interest, one on "Some details concerning iron accessories to domestic architecture," the other on "The treatment of the pergola." The former is chiefly concerned with Spanish examples, the latter includes instances from both American and English practice. The residence of Mrs. H. B. Gilbert in New York is styled an "excellent Gothic residence," but, although the street front is a good design in French Flamboyant, the interior seems to be mainly a collection of various phases of Renaissance.



[The Editor will not be responsible for the opinions expressed by Correspondents.]

To Save the Crystal Palace.—Now or Never.

SIR,—The public does not yet realise that the Crystal Palace is in most serious and imminent danger of total extinction.

The Judge has ordered the Receiver to sell it.

A housing and town-planning scheme for its beautiful grounds—to be prepared at the public expense—is on the agenda of the London County Council, dated March 16, 1911. Do the people realise that thus they are invited to pay a large sum to help to cover the grounds with houses and streets? Unless the King Edward National Memorial is supported there is little doubt that the palace will be closed to the public within six months from this date. And that means for ever. Shall the Palace be saved to the nation and Empire? It is a case of now or never.

This Council, supported by very many persons most prominent in science, art, literature, the drama, the services, the church, and society in general, is most desirous of saving it to the people of the nation and Empire for ever, as the King Edward National Memorial. They then desire it to be so run as to secure benefit to the nation and pleasure to the people. Its control is to be by fourteen persons publicly elected; whilst all profits are to be given to national and popular objects. (Here it may as well be said that no member of this Council has any financial interest whatever in the Palace, nor in its sale or purchase.) The Palace can be saved within one week if each reader will send one guinea—either in one sum or in instalments, and to each subscriber of one guinea we give a life-free admission ticket to the Palace—which should be worth many guineas. And if for any reason we cannot acquire the Palace the money will be returned. Large gifts have been received, and others will be welcomed. Every subscription will be publicly acknowledged. Thousands are supporting the movement, but we need one million.

Special privileges are offered to firms and future exhibitors who subscribe large sums. Particulars are sent to inquirers. An anonymous donor has given one million (1,000l. worth) of Crystal Palace stamps to sell at one farthing each. Every purchaser of 25s. worth (which may be purchased in instalments) will be given a life-free admission ticket. Thus by selling the stamps the life ticket will cost him nothing. All further particulars may be obtained from, and cheques crossed "Lloyds Bank, St. James's Branch," should be addressed to,

The Right Hon. the Earl of Kinnoull, D.L.,

The King Edward National Memorial Office,

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The above privileges are offered to members of the nation, the Colonies, Dominions and dependencies throughout the Empire. (Will Colonial papers please copy.)

Thanking you for your courtesy.

Yours faithfully,

TENTERDEN (Chairman),

KINNOULL (Hon. Treasurer),

DECIES,

ALFRED E. TURNER, K.C.B., Maj.-Gen.,

W. H. TREACHER, K.C.M.G.,

WILLIAM P. TRELOAR, Bart.,

W. J. POTTER.

(Council.)

MR. W. A. SCOTT, A.R.I.B.A., M.S.A., Dublin, has been appointed to the vacant Professorship of Architecture in University College, Dublin, by the Dublin Commissioners appointed under the Irish Universities Act.

At a meeting held at Northampton in the rooms of the Northants Architectural Society a new association was formed, to be known as the Northamptonshire Association of Architects, which will be open to architects in practice in the town and county as members, and to architects' assistants and pupils as associates. Mr. J. A. Gotch, F.R.I.B.A., of Kettering, has consented to fill the position of president, and Mr. Sidney F. Harris, F.R.I.B.A., will act as vice-president, whilst the secretarial duties have been undertaken by Mr. Herbert Norman, Northampton.

The Architect, April 7th 1911.



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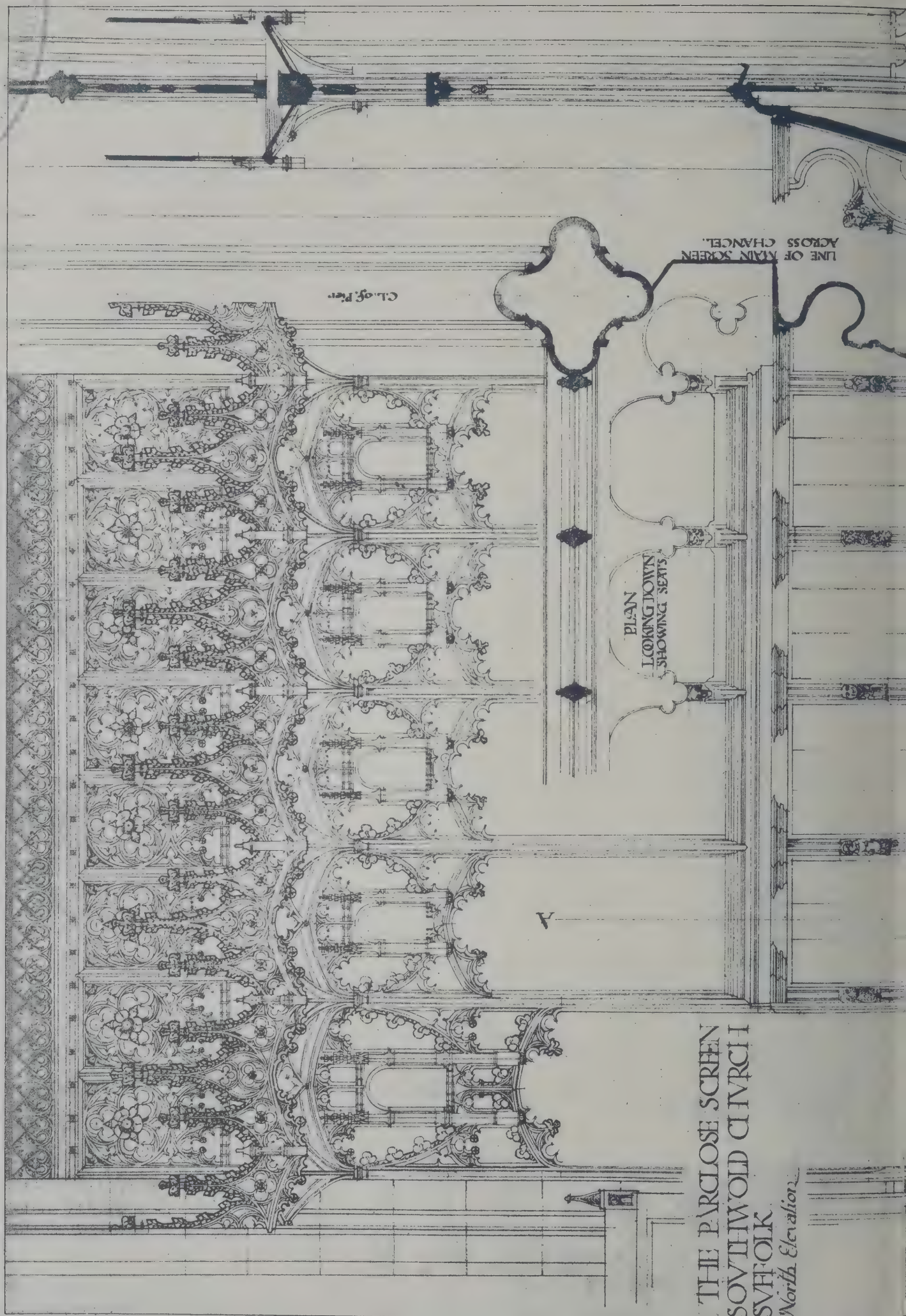
THE DESIGN BY MR. T. W. CAMM, A.C.S., FOR THE STAINED GLASS WINDOW.

DESIGN FOR STAINED GLASS WINDOW.

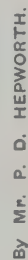
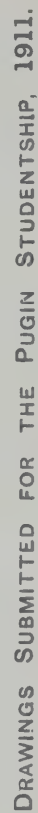
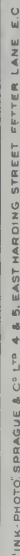
By MR. THOMAS W. CAMM.

Royal Academy Exhibition, 1910.

The Architect, April 7th 1911.



THE PARCLOSE SCREEN
SOUTHWOLD CHURCH
SUFFOLK
North Elevation





*New Stone Front
73 South Audley Street.
Paul Waterhouse Architect.*



The Architect.

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FORTHCOMING EVENTS.

Wednesday, April 19.

York and Yorkshire Architectural Society: Mr. H. E. Henderson on "The Domestic Architecture of the Yorkshire Dales."

Saturday, April 22.

Building Trades Exhibition, Olympia, opens April 22—May 6.

Monday, April 24.

Architectural Association: Professor Beresford Pite on "Alberti and Bramante: Architecture a Profession or an Art in the Cinque Cento."

Surveyors' Institution: the adjourned discussion on Mr. W. R. Baldwin Wiseman's Paper on "The Conservation of our National Water Resources," and on Mr. W. Vaux Graham and Mr. H. F. Bidder's Paper on "Judicial and Parliamentary Decisions with regard to Rights in Underground Water since 1907," will be resumed.

Friday, April 28.

Society of Architects: Twenty-seventh Annual Dinner to be held at the Holborn Restaurant.

COPYRIGHT IN ARCHITECTURE.

THE Bill introduced this Session into Parliament by Mr. SYDNEY BUXTON, though somewhat different in arrangement, is practically on the same lines as that of last Session, but with some amendments affecting architecture that are probably the result of criticism on the earlier drafting.

Whereas in the previous Bill it was provided that "copyright in a work of sculpture in artistic craftsmanship, if situate in a public place or building, and copyright in an architectural work of art, shall not be infringed by making paintings, drawings, engravings, or photographs thereof," it is now proposed to be enacted that an infringement of copyright is not constituted by "the making of paintings, drawings, engravings, or photographs of a work of sculpture or artistic craftsmanship, if situate in a public place or building, or the making of paintings, drawings, engravings, or photographs (which are not in the nature of architectural drawings or plans) of any architectural work of art." Thus it will be open to students to make sketches or photographs of a modern building, but it will not be permissible to make measured drawings without the sanction of the owner of the copyright.

It has been objected that the provisions of last Session's Bill created a dual ownership in architectural copyright by the stipulation that copyright should belong to the person by whom a work was ordered "unless the work is an architectural work of art, or is an artistic work intended for a public place or building, in which case the author shall be the first owner of the copyright, but shall not be entitled to make, or authorise the making of, reproductions of the work except with the consent of that other person, and that other person shall be entitled to the same remedies in respect to the infringement of the copyright in the work as if he were the owner of the copyright." The effect of this would have been that when an architect had designed a building for a client "for valuable consideration," the architect would have been the owner of a copyright which he could not utilise without the consent of the client, whilst the client could not erect, or permit anyone else to erect, a replica of his own building because the architect would be owner of the copyright. Thus there would be created, not really a dual ownership, but a dual disability to make use of a property created by the Bill copyright in an architectural work of art.

This objectionable arrangement is now entirely cleared away by the section (5) which defines the ownership of copyright: "Subject to the provisions of this Act, the author of a work shall be the first owner of the copyright therein." The only exceptions to this are that "(a) where in the case of an engraving, photograph, or portrait the work was ordered by some other person and was made for valuable consideration in pursuance of that order, then, in the absence of any agreement to the contrary, the

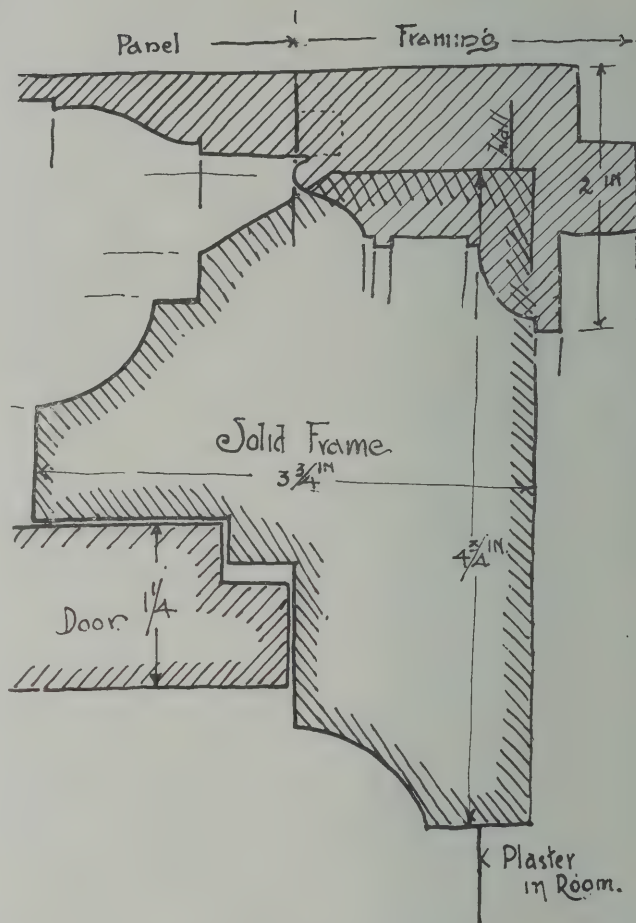
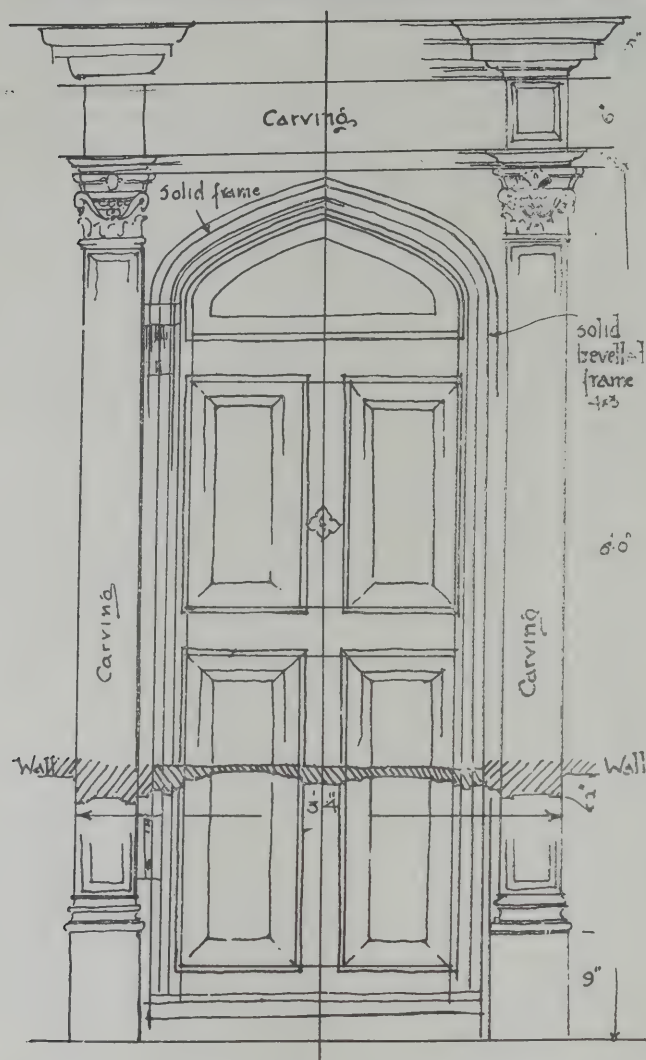
person by whom the work was ordered shall be the first owner of the copyright; and (b) where the author was in the employment of some other person and the work was made in the course of his employment by that person, the person by whom the author was employed shall, in the absence of any agreement to the contrary, be the first owner of the copyright." Thus an architect equally with a sculptor or a painter (except in the case of portraits) will as the author be the first owner of the copyright of his design. The architect's assistant, however, cannot claim copyright even if he entirely makes a design for his master.

Civil remedies in the case of infringement of copyright are not very clearly defined, it being provided that the owner shall "be entitled to all such remedies by way of injunction or interdict, damages, accounts, and otherwise, as may be conferred by law." In the case of architecture it is reasonably still proposed to be enacted that the completion of a building which infringes copyright shall not, when once commenced, be prevented by injunction or interdict, nor shall the building be demolished or become the property of the owner of the copyright as is provided for pirated books, music, and all other works in which copyright subsists.

Thus the Bill, if passed in its present form, will not necessarily prevent piracy or copying of an architectural work of art, but will merely enable the owner of the copyright to obtain some compensation for the piracy, and the amount of this will have to be settled by the Court. The recognition of any copyright in architectural design is, however, so entirely novel in this country that we should be thankful for small mercies. Some day it may be realised that piracy is inimical to the art of architecture.

The definition of an architectural work to which Professor REGINALD BLOMFIELD has taken exception still remains: "'Architectural work of art' means any building or structure having an artistic character or design, in respect of such character or design, but not in respect of the processes or methods of its construction." We think the intention of the Bill is clear. You cannot copyright bricklaying, or masonry, or reinforced concrete as processes or methods of building, but you can copyright an arrangement of bricks, or stone, or concrete that possesses artistic character or design, not necessarily ornament, which is a term not mentioned in the Bill. Indeed, it would seem that there is a correct recognition that artistic character or design may exist quite independently of ornament.

In forming an opinion on the Bill at present before Parliament, there are a few salient facts which architects ought to recognise. First, it is now by way of being legally recognised that architecture is on a plane with other arts; next, that there is a difference between an architectural work of art and a mere building; further, that the architect who creates a work of art is worthy of recognition



CHAPEL DOOR AT COMPTON WYNYATES.—Measured by Mr. BANISTER F. FLETCHER, F.R.I.B.A.

and protection, for which purpose there is created for him, now for the first time, a new form of property, copyright.

There need not, we think, be any fear that the creation of copyright will have a dwarfing effect on progress in architectural design. There is a large amount of material in what is known as the "domaine public," which is at the service of everyone. Reproduction of a copyrighted work must include a "substantial part thereof" to constitute piracy or infringement. An author may grant permission for a partial as well as for a total reproduction of his copyright.

NOTES AND COMMENTS.

THE short Bill which has been introduced in the House of Commons entitled "Public Health (Sewers and Drains) Bill" has for its main object an amendment of the definitions of "sewer" and "drain" in the Public Health Acts. Under those definitions any drain used for the drainage of more than one house becomes technically a sewer and therefore vested in and repairable by the local authority, even though it may be wholly situated on private property and used as a single private drain. This distinction between a sewer and a drain has led to many difficulties, and the attempt at overcoming them made by the Public Health Acts Amendment Act, 1890, has only made confusion worse confounded.

It is true the difficulties have been more acutely felt by officials of Municipal Corporations and District Councils than by the public generally, and therefore it is readily comprehensible why the present Bill has been introduced at the request of the Association of Municipal Corporations and of the Urban District Councils Association.

THE chief provision of the "Public Health (Sewers and Drains) Bill" is that for the purposes of the Public Health Acts, 1875 to 1911, every sewer is to be a drain except sewers along or under any highway; sewers acquired or constructed by a local authority; sewers conveying sewage from the foregoing; sewers made by any person or company for profit; sewers made and used for the purpose of draining, preserving, or improving land under any local or private Act of Parliament or for the purposes of irrigating land; sewers under the authority of any commissioners of sewers appointed by the Crown; sewers within the district of a local authority which have been, or may hereafter be, constructed by or transferred to some other local authority, or by or to a sewage board or other authority empowered under any Act of Parliament to construct sewers; any natural water-course or ditch which had become a sewer at the date of the passing of this Act.

WHEN a drain (which is now a sewer) used for drainage of two or more buildings belonging to different owners requires alteration or amendment the Bill provides that the local authority may call on the owner or occupier of any one of the buildings to do the work within any such time as the authority chooses to fix. If the work is not done accordingly the authority may do it themselves and charge the cost on the owners of all the buildings in equitable shares and proportions. This will probably mean that the local authority will always do the work, as there appears no provision in the Bill for the one owner or occupier selected to recover any share of the cost from the others, nor is there, necessarily, to be sufficient time allowed to enable him to enter into negotiations and agreements with the others.

REGISTRATION appears now to be approaching rapidly and those architects who do not wish to be left out in the cold would do well to take early advantage of the grace that has been offered by an extension of the time during which they can apply for being included amongst the Licentiates of the Royal Institute of British Architects. Of course, those *soi-disant* "architects" who unite with their artistic efforts the more lucrative callings of auctioneers and undertakers need not trouble to apply, and those who are reluctant to sign an undertaking that they will not accept illicit commissions will naturally remain outside the fold.

Now that the scheme for London's Memorial to King EDWARD as an alteration to St. James's Park has been definitely abandoned in deference to the very considerable expression of disfavour there are naturally many alternative suggestions in the field, some of which are based upon the principle, which we have already put forward in a previous Note, of making the Memorial part of the Mall processional road. Amongst these are the suggestion of Mr. MARTIN, M.P. for St. Pancras East, of an arch over the Mall, and the scheme advocated by Mr. JOHN SMITHERS of a statue and adequate approach to the Admiralty Archway from Trafalgar Square and Charing Cross. We think something might be made of this latter scheme.

THE Copyright Bill having been read a second time it now remains for the Committee stage to make or mar its utility. As far as architecture is concerned we do not think there is a great deal of improvement to be made in the present state of public feeling towards our art. We should like a little more than the Bill gives us but should be content, for the present, with what we are already promised.

SCOTLAND's attempt at a national memorial to King EDWARD seems to have ended in failure from the antipathy of Glasgow and the West to a scheme which included Holyrood as its basis of operation. Hence it would appear that whilst Edinburgh and its neighbours in the East will make the Holyrood scheme their memorial, Glasgow and the West will inaugurate a crusade against consumption or something else that is not near Edinburgh as the basis of their memorial, if they can so far agree amongst themselves on any one definite proposal.

THE PAINT AND VARNISH SOCIETY.

AT a meeting held on April 6, Mr. Noel Heaton read the following paper on "The Decorator of Ancient Times":—I suppose that if there is one thing more than another to which we, as a society, are devoted, it is progress. Our society was formed with the avowed object of encouraging the application of scientific methods in the production and use of decorative materials; that object, I take it, we all have at heart.

It may seem out of place, therefore, at first sight, to a society of this sort, to pay any attention to the past, when all our efforts are concentrated on the future. But, occasionally, it is useful even for the most progressive body to look back, and see if it is not possible to draw any lessons from what has been done in past times. It is an efficient corrective to swelled head, to mention only one point of view, to be brought face to face with the realisation that brains were invented long before the twentieth century, and that sometimes methods and processes which we to-day hail with advertisements and puffs as the latest products of scientific achievement, were used when the world was young, and have been forgotten and buried in the dust of centuries.

It is a mistake to ignore the past; it is equally a mistake, however, to follow in the footsteps of those whose gifted imaginations are developed at the expense of their powers of accurate observation, and to accept their wild tales of the wonderful works of the past without criticism and without inquiry.

I suppose there are few subjects about which such hazy ideas exist in the mind of the average man as to the history and development of painting and decorating in modern times, and when we go further back and consider how the

decorator set to work to embellish the luxurious houses of Rome in the palmy days of her civilisation, one so often sees such wild and impossible ideas set forth even in print that I thought it might not be without some interest to you to-night if I were to endeavour to clear the matter up to some extent.

Of course, when one discusses ancient times from any point of view, one is expected to begin by saying something about the period which is generally somewhat glibly summed up as "that of the ancient Egyptians." I think some people have the idea that the Egyptians all lived at the same time; they would not think much of the boy who got mixed up between the Battle of Waterloo and the Battle of Hastings, although the difference in time involved would be a small one in the history of the civilisation of Egypt. This, however, is by the way: I want you to look at the illustration I now show you of a portion of the decoration of the Palace of Sneferu. This is one of the earliest examples of domestic mural painting of a developed nature extant, and it can be dated with fair certainty at 4700 B.C. (that is, remember, nearly eight times the period that separates us from William the Conqueror).

A specimen of this same painting lies on the table before you, and from it you will have no difficulty in following how the man who made it set to work. First of all he levelled the rough surface of the wall by a liberal coat of mud worked up with bitumen and straw, on which was then laid a second coat of similar composition, only very much finer in texture. On this, again was laid the final coat of fine plaster, about one millimetre in thickness, which formed the smooth ground for the painting. On this ground the painting was executed in distemper, the pigments being mixed with gum orsize. It is practically impossible to determine the exact nature of the adhesive, but the important point is that the painting is distinctly water-colour, and can be obliterated in a moment by passing a damp sponge over the surface; in fact, the whole fabric of the plaster is destroyed and converted into mud on immersion in water.

This forms an excellent illustration, therefore, of one fact about ancient paintings which is frequently overlooked. You look at this specimen, and you notice that after 6,000 years it is, to use the recognised phrase, "as fresh as the day it was painted," and perhaps you draw conclusions as to the wonderful secrets they had in those times. But I say to you that a painting executed in this manner to-day would not survive the ordinary wear and tear of a London house for six months. As Dr. Immerheiser was telling us last month, permanency is a relative not an abstract term, and before you fall down and worship the master decorator of the Pharaohs, and raise golden images to Isis and Horus, remember that these paintings have lasted because they were executed in a climate that knows no rain and is never damp. They were as a rule, moreover, protected from the light and the effects of wear and tear, for you must remember that, as regards the great majority of Egyptian relics, they are obtained from the elaborate rock tombs which formed an essential feature of their religion, and, to all intents and purposes, were hermetically sealed from all destructive agencies. As you are all aware, the most fragile things have been preserved under these conditions, and have come down to us in perfect preservation to grace our modern museums. I have chosen this particular example, however, because it formed part of the decoration of a building more or less domestic in character, and was, therefore, probably subject to something in the way of wear and tear.

The plaster work we are now speaking of was not, however, the most usual method of house decoration at any time in Egypt. The walls were more commonly covered with designs cut in the freestone, the incised portions being picked out by means of a wash of water colour. Elaborate inscriptions and decorations of this nature were characteristic of Egyptian craftsmanship of all periods, and are too familiar to all of you to need any description; but I would like to refer in passing to the experiment in decoration illustrated in this slide, which represents, as you see, a crane, a man, and a monkey, in a most realistic way, and is part of a most charming series of decoration from the chapel of Nefermaat, at Mejdum. I have no doubt that many of you have seen the original, which was exhibited at University College last July, when Prof. Petrie kindly allowed me to take these photographs.

The method of execution was as follows:—The design was first incised in the stone, the edges being somewhat undercut, and the ground left rough and scored over so as to give a key. The incised portions were then filled up in

flush with the surrounding surface with coloured pastes. I have not had an opportunity of examining these pastes myself, but, according to Dr. Russell, they were prepared by mixing the various pigments with a sort of mastic varnish into the consistency of putty.

We gather from the inscription that Nefermaat was immensely proud of this new departure in decoration, and it was confidently anticipated that it was going to provide what from that day to this conscientious artists have been looking for, but what is to-day as elusive as ever—an absolutely imperishable and permanent method of decoration. Whether it was that even in those days the question of expense had to be borne in mind, or whether the journeyman painters, anticipating the silversmiths of Ephesus, rose as one man and slew the inventor, the inscriptions do not record, but it is certain that the process did not attain popularity, and, in fact, no other instance of its use has been discovered.

The colour washing of stone and the painting of plaster in distemper remain the characteristic methods of decoration down to the time of the Ptolemies. In the palace of Akenhaten (1400 B.C.) at Tel-el-Amarna, for example, paintings on plaster were found executed in distemper in practically the same manner as the example of 3,000 years earlier I have just described; of this later work the well-known picture of the Princesses in the Ashmolean Museum is an example.

But whilst these things were being done in Egypt, there was arising in the Mediterranean another great community which was destined to play a most important part in modelling that European civilisation of which we of to-day are the products. The Minoan civilisation of Crete is so familiar to most people to-day that it is difficult to realise that its very existence was a matter of legend and conjecture until Dr. Evans commenced his epoch-making excavations at the palace of Knossos, scarcely more than ten years ago, and set the archaeologists of four nations vying with one another as to who should reconstruct best the history and the customs of King Minos and his people.

It would, of course, be quite impossible in the time at my disposal, as well as out of place, to attempt any description of Knossos and the other Minoan palaces found in different parts of the island; I can only give you a bare outline even of the one aspect of their civilisation which more particularly interests us, namely, the extent to which they had developed the art of domestic decoration.

This is perhaps one of the most interesting of the many extraordinary discoveries brought to light by these excavations, for we have here a clue to the origin and development of a process of decoration which was the chosen medium of many of the great artists of our own era, and was in a humbler sphere the recognised method of house decoration until modern times, when it was gradually supplanted by oil painting. In saying this I am referring to the fact that the Minoans during many centuries maintained the tradition of decorating their houses throughout with fine plaster painted in fresco, and in the culminating period of their civilisation covered their walls, their ceilings, their floors, and even their stairs with a most elaborate and detailed scheme of decoration produced in this manner.

I take it that you are all more or less familiar with the manner in which a fresco painting is executed, and the chemical reaction on which it depends. To remind you roughly of the process, the wall on which the painting is to be executed is first levelled with a coat of somewhat coarse plaster, and then an extremely fine and carefully prepared plaster is got ready: according to modern practice this is made with very carefully and thoroughly slacked lime with fine marble dust. This fine plaster is laid on as a second coat over the other, only as much of the wall being prepared as can be painted in one day, and as soon as it is firm the painting is executed rapidly, the pigments being ground up in water, no medium whatever being employed, the painting being permanently fixed and rendered perfectly waterproof by the setting of the plaster.

You will readily see how this comes about when you consider that the plaster, as applied, consists practically of a solution of calcium hydrate mixed with excess of hydrate in the solid state and the marble dust. When this plaster is spread on the wall, the water of course commences to evaporate, and immediately this happens calcium hydrate is deposited from the saturated solution, cementing together the solid particles already present and causing the mass to "set." Then the mass of hydrate formed gradually combines with the carbon dioxide present in the air, until ultimately the whole mass is converted into insoluble

calcium carbonate. The pigments used in painting being, as I have indicated, laid on the soft wet surface, they become surrounded by the saturated solution of calcium hydrate, with the result that as it hardens in this way they are firmly incorporated in the mass and a permanent painting is secured.

The result is, that in fresco painting we have a process of decoration by means of which pigments are firmly incorporated with the painting ground, and become in fact part of it, without the intervention of any of those organic mediums such as linseed oil, which as we know are by no means unmixed blessings.

It is not my purpose to-night, however, to discuss the merits of fresco as compared with other methods of painting. Both from the artistic and scientific points of view this is a much debated question, on which I hold perhaps unorthodox views. What I do want to draw your attention to is the high state of technical excellence which was attained in the execution of this process by the Minoans in prehistoric times, and the extraordinary extent to which it was applied in the decoration of their houses and palaces throughout Crete.

Previous to the discovery of these paintings you must understand it had been supposed that fresco painting was introduced by the Romans, and that it was not in general use until the dawn of the Christian era. As we have seen, it does not seem at any time to have been known to the Egyptians, and the probable explanation of this is that there was no incentive for them to discover such a process in a country where a painting that barely resists the touch of a damp finger will remain unscathed for 6,000 years.

In Crete it was different—there the climate is more on a par with our own; it is true it is much hotter, and its summer is something better than the English summer at its very best, but it is subject to torrential and long continuing rains in the winter and spring, alternating with the extremely severe winds locally known as "sirocco." Even in summer the condition of atmosphere generally known to us by that expressive word "muggy" is not unknown, and when such a state of humidity alternates with extremely hot sunshine a condition is produced which is very severe on structural work of any kind, and decorative work especially.

It is probable, in fact, that the method of decorating in fresco employed by the Minoans was an outcome of the use of plaster in the first instance as a means of protecting their buildings from the effects of weathering, for we find that they were in the habit of using largely in their buildings a local rock composed entirely of crystalline calcium sulphate (gypsum) which, although extremely beautiful as a building stone, is, as you can well understand, so soft and so freely soluble in water that structures in which it is used decay almost "whilst you look at them."

At a very early period of their civilisation they apparently discovered the use of lime as a plaster, and then they found that by applying pigments to the wet plaster they could colour it permanently in any desired fashion, and from this in course of time they developed the magnificent plaster and the elaborate system of decoration which is characteristic of their later work.

I am not in a position yet to trace out the exact history of the development of this craft from the technical point of view, although I can recognise the main outlines, and it would only weary you to discuss the evidence at length, but I will now describe as briefly as possible its highest development as found in the ruins of the Palace of Knossos, which whilst apparently in the height of its prosperity was sacked and burnt and razed to the ground by some catastrophe concerning which we know nothing, and in all probability never shall know anything. We know for certain, however, that the whole of the vast building was burnt to the ground about 1500 B.C., and that later the inhabitants partially rebuilt it and that finally it was destroyed again and its ruins remained practically untouched until ten years ago.

We know all this, amongst many other things of the most absorbing interest which time will not allow me to speak of to-night, from the abundant traces of fire on the walls and from many of the paintings having fallen from the walls charred and blackened and in many cases unfortunately destroyed beyond recognition. Enough, however, remain in good preservation to reconstruct the art of the time, and also enough to enable us to determine how the decorator set to work.

With the former aspect—the matter of design—I do not propose to deal to-night; the art of the Minoans is far too large and interesting a subject to be dealt with in anything

less than a whole evening, so I will content myself with showing you one or two typical examples of their work. But confining our attention to the technical aspect, the first thing to notice is the extraordinary extent to which plaster was used in those days. The whole house within and without was finished in it. Where the walls were built of rough rubble masonry, this was first brought to a level surface by a first coat of rough lime plaster freely mixed with sand, broken pottery, &c. In the case of squared masonry walls this preliminary preparation was unnecessary, and the final plaster was laid direct on to the stone, previously roughened to give it a key. The thickness of the plaster itself varied according to the circumstances; in some cases it was as much as three-quarters of an inch, in others barely one-quarter, whilst occasionally we find it laid on as the merest wash, just sufficient to hold the pigment. The illustration I now show you represents a section cut through a typical example. You will notice the extraordinary fineness and uniformity of the plaster throughout, and it is really a remarkable material, being of the most brilliant whiteness and very hard, firm, and coherent.

It is rather surprising to find that it is composed of pure lime without any addition, as you will see from the following analysis:—

Calcium oxide	...	...	...	...	51.93
Magnesium oxide	...	...	...	...	1.03
Silica	...	...	...	...	2.12
Iron and alumina	...	...	...	...	1.81
Carbon dioxide	...	...	...	...	41.18
Sulphuric anhydride	...	...	...	...	0.54
Alkali, &c., undetermined	...	...	...	...	1.39

Of course this analysis is not inconsistent with the possibility of marble dust, which is of practically the same composition, having been added; such an addition is, as I have indicated, considered good practice in modern work, the tradition being derived from mediæval times. But the presence of this is easily detected by microscopic examination, as you will see from the photo-micrographs I now show you, and a series of careful experiments extending over two years has failed to reveal any other material in the original plaster than caustic lime.

I will not discuss these experiments in detail now, but I would like in passing to mention one of the points, which is rather interesting. It struck me whilst I was examining these paintings on the spot that if the plaster was made in this way, the lime of course being obtained by burning limestone, one ought to be able to find somewhere in the neighbourhood a limestone corresponding in composition with the plaster. Now some mile or two from the site of the palace, following the valley of the river, one finds in the side of the rock the entrance to what proves to be an enormous cavern. I will indicate the position of this cave by a series of photographs taken along the road from it to the palace, which incidentally gives you some idea of the scenery of this charming island. No native will enter this cave, about which all sorts of wild legends are extant. Anyone with a knowledge of geology, however, would be puzzled to account for such an enormous cavern on natural grounds, and would be tempted to suggest that it may have been a disused quarry. And so it proved: on entering it one finds oneself in what one can only compare to a vast underground cathedral, a series of immense pillars having been left in the native rock on quarrying so as to prevent the roof from collapsing. These pillars and the walls still retain the marks of the tools by which the blocks of limestone were hewn out close on three thousand years ago. I collected some typical specimens of the stone for examination: here is the analysis:—

Calcium oxide	...	...	...	...	52.09
Magnesium oxide	...	...	...	...	trace
Silica	...	...	...	...	2.22
Iron and alumina	...	...	...	...	2.18
Carbon dioxide	...	...	...	...	41.00
Sulphuric anhydride	...	...	...	...	0.20
Alkali, &c.	...	...	...	...	0.98
Moisture	...	...	...	...	1.33

And I think you will agree with me that the agreement is too close to resist the conclusion that here was the source of the lime used for the plaster.

There are many other points of interest in connection with the plaster which I would like to describe, but I must pass on to consider the decoration itself. As one would expect, the pigments used for this purpose are for the most part such as are of natural occurrence. The lime itself gave

white, and yellow was obtained from a fine variety of yellow ochre, the exact source of which I have not been able to identify. Two different tones of red were used, both derived from iron oxide, one prepared by calcining the yellow ochre, and the other by grinding hæmatite; specimens of the raw materials from which this matter was prepared have turned up on the excavations. Black was obtained from a carbonaceous shale similar to that known as Italian chalk, referred to by Cennini and others. The most interesting pigment, however, is the blue, which was a variety of the well-known "Egyptian blue," prepared, as Flinders Petrie has clearly demonstrated by his excavations at Tel-el-Amarna and elsewhere, by fusing copper oxide with sand and alkali—a sort of cupric sodium silicate, in fact. This is a magnificent colour, and it would be interesting to know if it was discovered independently, or whether the Minoans imported the idea from Egypt, or vice versa. There is, however, not sufficient evidence to warrant one in expressing an opinion at present.

These were all the pigments used, and, as I have already indicated, the decoration was executed in the manner we know as fresco. In a paper I communicated to the Society of Painters in Tempera* recently, I recited at length the experimental evidence on which I am able to assert, without hesitation, that this is the case; I will not repeat these arguments here, as they are available for reference, but will now show you a series of photo-micrographs which will, I think, convince you of the truth of this statement. To judge by the huge scale of some of these paintings, and the precision with which they were executed, the work must have been carried out with great rapidity and sureness of execution, and it is evident that the Minoans had a great school of decorative painters, who derived from a long cherished tradition a combination of technical excellence and vigorous design that compares favourably with any period of the world's history. Fresco paintings with them were the regular mode of decoration, and were used as we use wall-papers, and as our ancestors used arras.

When they were tired of the decoration of a room or it became damaged, they hacked over the surface to give a key, and then laid on another coat of plaster and executed a fresh scheme of decoration. Sometimes, instead of doing this, they hacked the plaster right off and started afresh; numerous fragments of such plaster have been found used to level up floors, and incorporated with later buildings, and generally these are some of the most perfect specimens, having been protected from the effects of the fire which, to a large extent, destroyed the paintings in situ at the time of the destruction of the palace. The perfect state of some of these fragments, a few of which I am able to show you to-night, indicates that the decorations were at any rate permanent enough to outlast their use, and this is an important point, because I must remind you that we are speaking of the decorations, not of a tomb, but of a building which was the centre of government and religion of a powerful state.

The paintings of which I am speaking lined the walls and floors of the stately rooms and corridors of this magnificent palace, which must have been daily thronged by multitudes of people from all parts of the then known world, and as such they were subject to conditions comparable with those of the present day. As an interesting example of the stability of this painting, I show you a small fragment which turned up in the first year of the excavations, and was inadvertently left on the top of a wall until it was found last summer. In this exposed situation, alternately drenched with rain and scorched by the sun, it had remained for ten years, and, as you see, to use a colloquial expression, "it has not turned a hair," although under the same conditions modern paint and even woodwork used in reconstruction has perished, and the local building stone has appreciably decayed.

With the decline of the Minoan civilisation, and the transference of power to the mainland of Greece, our knowledge of this branch of decorative work becomes very scanty. How far the Greeks carried on the tradition of fresco painting is a matter for further investigation, and I am not in a position as yet to give you any conclusions as to their methods. We know, mainly from the statements of Pliny, that they introduced a new method of decoration, that of encaustic, or painting in melted wax. This process has received considerable attention by Dr. Launie, and is discussed at length in his recent book,† which collects all the

* Published in the *Journal of the Royal Society of Arts*, January 7, 1910.

† *The Materials of the Painter's Craft*.

evidence there is concerning this most debatable period, which I propose to pass over with this brief reference. Throughout this time, however, of course Crete was still occupied, and it was, in fact, a most important centre of art in the golden age of Greece: to mention one example, some of the finest coins the world has ever seen were those struck at Phaestos, a district on the south side of the island, which was the site of another important palace in Minoan times.

Coming down to the time of the Roman Empire, we find that an important town existed close to the site of Knossos; in fact, the foundations of the Roman houses rest on those of the outlying houses of the Minoan town surrounding the palace. In the photographs I now show you of the excavations of this area you will see the remains of a Roman villa built above the foundations of a Minoan house. The date of this villa cannot be stated with certainty, but it is probably somewhat anterior to the destruction of Pompeii, and you will notice that the decoration of the walls is carried out in plaster. Whether the process was handed down to this period or introduced by the Romans I am not prepared to discuss at present, but it is certain that fresco was as important a method of house decoration as in the early times of the Minoans.

There are, however, distinct differences in the details of the process, and it is interesting to compare the work of the two periods on the same spot. The Roman work here compares very closely with that of Pompeii, which, as you are aware, was carefully covered up and preserved in A.D. 79 in order that we might be able to obtain an accurate knowledge of Roman life and work in the middle of the first century. (That is the way one is tempted to regard the disastrous eruption of Vesuvius at that date.)

The process of working employed at this time was investigated by Sir Humphry Davy as far back as 1815, and my own observations confirm his conclusions. The wall was first rendered with a lime concrete composed of lime mixed with an aggregate of small pebbles, and on this surface the decoration was executed, the plaster used being composed of a mixture of lime, marble dust, and pounded brick or volcanic lava, this being laid on in a thickness of only about three millimetres as a rule. The painting was executed in fresco, as has been clearly proved by many experimenters from Davy onwards, finishing up with myself. I have here some specimens from which you will be able to judge for yourselves. One hears from time to time various statements as to how the celebrated paintings of Pompeii were executed, made by those who are content to surmise rather than face the somewhat laborious process of practical investigation.

As far as my own experience goes, we may dismiss all such stories as that the Romans were in the habit of using a laborious process involving the application of some thirty or forty coats of some preparation of casein, as what is described by Shakespeare as "the baseless fabric of a dream." There is no doubt that they were executed by trained artisans who covered square yards once and for all in a single day, although both as regards design and technical skill they were far inferior to the Minoan craftsmen at their best.

I would like to add a caution in passing as to the danger of judging such work, from the technical point of view, by what you see in museums. If you examine the Pompeian paintings preserved in Naples Museum, or for that matter the Minoan work in the Museum at Candia, you will come to the conclusion that they were painted in wax. This is because they were impregnated with wax in what Dr. Evans happily describes as "the days of King Minos the Terrible," that is to say, that they were subjected to this preservative treatment by zealous museum officials.

Remains of similar plaster work are found wherever a Roman site is investigated, showing that it was the customary mode of decoration. There are numerous examples in the Forum at Rome, and I found traces of it at the Coliseum.

It is interesting to note that it was extensively practised in this country in these times and proved eminently practical, as is evidenced by numerous remains in good preservation. Some very interesting examples of Roman fresco work are to be seen in Colchester Museum, for example. Some of these illustrate very well the practice of overlaying the fresco with another to which I have already referred. We can obtain a fair idea of the domestic life in England at the time the Romans abandoned the country to its fate, from the buried city of Silchester, near Reading, which has now been entirely explored and mapped out. By way of conclusion, I show you a few photographs taken during the progress of these excavations. Only the foundations of the

houses are here standing, but amongst the débris formed by the falling of the ruins are found numerous fragments of fresco, showing that they were decorated in a manner similar to that employed at Pompeii some 400 years earlier.

With the fall of the Roman Empire the standard of civilisation and consequently the practice of the decorative arts suffered another period of decline. To trace out its history through this dark period and the subsequent rise through mediæval times, culminating in the traditions and practice of to-day, would take me far too long and trespass too much on your patience. Moreover, my mandate to-night was to discuss the decorator in ancient times, and, having done that to the best of my ability, I will bring these remarks to a close.

THE CONCRETE INSTITUTE.

AT the sixteenth ordinary general meeting of the Concrete Institute on the 6th inst. at Denison House, 296 Vauxhall Bridge Road, Westminster, S.W., Sir Henry Tanner I.S.O., F.R.I.B.A., the President, occupied the chair.

A paper entitled "Swanscombe Ferro-Concrete Pier" was read by Mr. C. Percy Taylor, Assoc.M.Inst.C.E.

The gradual development of the Associated Portland Cement Manufacturers' Swanscombe works since the commencement of their rotary plant in 1899 has resulted, said the author, in a very large increase in the capacity of the works, and necessitated considerable enlargement of the wharves, more especially for the loading of cement into steamers and sailing ships direct.

The most important point was the provision of a deep water L-shaped concrete pier, with a frontage of 130 feet and having a depth 17 feet at low water and 37 feet at high water (spring-tides).

Owing to the wharf being situated about three-quarters of a mile from the works, the cement, whether in sacks or casks, has to be transported from the warehouses to the wharf in covered wagons. It was necessary, therefore, for these wagons and the locomotives to go direct on to the pier. The wagons weigh when fully loaded ten tons, and the wheel base is 4 feet. The locomotives weigh twenty tons, on a wheel base of 5 feet. To provide for all contingencies it was decided to design the pier to carry the maximum number of locomotives or wagons which could possibly be put on it. In calculating the bending moment of the beams and slabs, all live loads were increased by 50 per cent.

The foundations consist of thirty-two columns, which except at the corner, were constructed in pairs on 25-foot centres, the pitch longitudinally being 28 feet. Each pair of columns is connected just above low-water level by a horizontal brace and at the top by a cross-beam. Between the last three pairs of columns at the outer end of the pier there is in addition a reinforced diagonal strut. Except at this end of the pier, however, it was considered that the I shape of the structure as a whole secured sufficient stability and in actual practice this has proved to be the case.

It was ultimately decided to restrict the loading of vessels almost entirely to the down side of the approach and the outer face of the pier.

Experimental borings showed that the bed of the river consisted of a thick layer of mud overlying ballast with chalk below, and that a good footing for piles was not likely to be reached at less than 60 feet to 70 feet from the deck level of the pier. For this reason it was desirable to use a construction which involved a minimum of long piles. The other chief idea underlying the designs adopted was the desirability of carrying the full diameter of the columns right down to the bed of the river without necessitating the deposition of concrete through water. In the author's opinion the practice frequently adopted in similar structures of depositing concrete inside a shell through a considerable depth of water down a shoot produces a concrete of very questionable strength. A case recently investigated, where a very poor piece of concrete was found near the top of a column, clearly showed that when the concrete was poured down the shoot into the cylinder a large proportion of the cement had been washed out and floated to the top, where it collected as a layer of cement and mud without cohesion or strength, owing to each particle setting before forming into a mass; the result was weak concrete at the bottom of the column and a mass of individually set particles of cement at the top. Bearing in mind, therefore, the desirability of depositing as little concrete as possible through water, a system of constructing the columns was worked out, in which the concrete carrying the weight of the structure was

in the form of blocks moulded on shore and matured before being placed in position.

In the general arrangements for constructing the pier the main idea was the avoiding of false work—the working platform being supported entirely on the permanent structure previously completed. Six heavy pitch-pine baulks about 70 feet long were carried on timber framings supported at first on the wharf and later on the top of the completed columns. The overhanging ends of the baulks were stiffened by raking struts, which rested on a cross timber attached to the base of the columns just above low water, and reached to another cross timber underneath the ends of the baulks. The main timbers were so placed that the blocks of the columns could be lowered between them. A scotch crane was erected over the backs of the long baulks.

The design of the columns provided for blocks laid one on the other surrounding a central pile, the blocks being keyed together by a recess and projection, and also by rails passing through vertical holes around the central pile. The blocks were further strengthened by $\frac{3}{4}$ -inch round rings of about 4 inches less in diameter than the block built in about every 8 inches. The only concrete which had to be deposited under water was that used for filling around the pile and the rails. The quality of this was not of such great importance as that of the mass of the blocks.

The central pile alone was not sufficient to support the total weight to be carried by each column—about 150 tons as a maximum—but on the other hand the carrying of more than one pile through the column would have necessitated either a very large diameter or else a block with very little solid material in it. It was therefore proposed to rest the base of the column on some additional piles driven round the centre one and cut off at about ground level. In order to secure ample rigidity for the connection between the piles and the column, the bottom blocks were made in the form of a hollow shell. These were firstly made in a reinforced concrete throughout, in the belief that the bed of the river would be sufficiently soft for them to be forced through the upper layers to form a key. Experience with the first few columns, however, indicated that this was not the case, and afterwards the sides of the shells were made of steel plate fixed to the reinforced concrete top. To further increase the rigidity of the column base a hollow was grabbed out in the bed of the river at the site of each column, so that the top of the shell-block actually came about level with the bed of the river, the hollow being afterwards filled with concrete in bags.

The driving of the additional piles and the cutting of them off at the level of the ground was a simple enough operation in the first few columns above low water, but it would doubtless have proved costly both in execution and labour when working in deep water. It was therefore decided to try a system of dollying them down to a dead level, and this was found by experience to work very well indeed.

The next operation was the placing of the longitudinal beams, which were all of identical design. These were moulded on shore and lifted into place by the crane, being temporarily supported on rolled steel joists going right across the pier on each side of the column tops, these being hung from needle beams. The steelwork was, of course, removed as soon as the cross-beam and floor were set, the joists being used several times.

This arrangement saved a large amount of heavy shuttering which would have been necessary to mould the beams in place, and also avoided the use of falsework to support the shuttering. As a matter of fact, for the construction of the pier itself only three temporary piles were driven. These were for the extra heavy beam forming the chord at the corner.

After the placing of the nine longitudinal beams, the crane and other plant were moved forward for the building of the next pair of columns, and the moulding of the main cross-beam and stiffener was taken in hand. The shuttering for the main cross-beams was of the simplest possible kind. The base was laid direct on short cross-bearers supported on the main rolled steel joists. The side shuttering in place of the end cross-beam was formed in bays each of five pieces, which were hinged together. The middle piece was rather shorter than the distance between two longitudinal beams. The side pieces were each about 18 inches—to form the end of the longitudinal beams—and the intermediate pieces were about 2 inches long and hinged to each of the others, so as to form an adjustable fillet. This shuttering could be fixed in place in a very few minutes, and without any cutting or fitting whatever, any slight variation in the spacing of the beams being met by an alteration in the

angle of the fillet, which was, of course, quite immaterial. The stiffener was formed in a similar manner, but the bottom shuttering for this had to be slung from the longitudinal beams.

The shuttering for the decking was carried on timbers bolted to the longitudinal beams through small holes especially left for the purpose. All bays—except at the corner—being alike, the shuttering was used over and over again without any alteration whatever.

Considering the design of the pier as a whole, objection may be raised that the idea of making the various portions on shore and connecting them together *in situ* is not consistent with the monolithic idea underlying reinforced concrete design. The author does not, however, consider that any such criticism is valid, in view of the fact that no structure of such a size can be said to be built in anything but small parts in actual practice, and that the divisions often occur where it happens to suit the foreman to cease his day's work, no provision being made to deal with the special stresses which may arise at the points of junction. In the structure described, all stresses occurring at the junction of old and new concrete were specially considered. At the points where the longitudinal beams were joined up to the projections from the cross-beams which formed their ends, the surface of the beams was very carefully cleaned and roughed, and, as the concreting of the cross-beams proceeded, the old concrete was carefully grouted over, but in addition to this precaution there was as a matter of fact sufficient steel in the section of the beams at this point to take the whole of the shearing forces. The forces needing consideration at the top surface of the beams as moulded have already been dealt with in detail above.

With even less rigid precautions than were adopted in this case, the author feels that the manufacture of separate members in the way indicated is amply justified where the work may be more simply and cheaply carried out by that method, and that where shuttering is specially expensive and difficult the method might well be adopted a good deal more often than it is at present.

At the conclusion of the paper a discussion was opened, in which the following took part:—Mr. F. E. Wentworth-Sheilds, M.Inst.C.E., Mr. E. P. Wells, J.P., Mr. Oscar Faber, B.Sc., Stud.Inst.C.E., Mr. Alfred Brooks, and Mr. W. G. Kirkaldy, Assoc.M.Inst.C.E.

It has been arranged for the members of the Concrete Institute to visit the International Building Trades Exhibition at Olympia on Monday, May 1, and in connection with the same the first of a course of six educational lectures under the auspices of the Concrete Institute is to be delivered by Mr. R. W. Vawdrey, B.A., Assoc.M.Inst.C.E., M.C.I. The other five lectures will be given in the Lecture Hall of the Concrete Institute at Denison House (close to Victoria Station), 296 Vauxhall Bridge Road, Westminster, S.W., on consecutive Wednesdays, May 3, 10, 17, 24, and 31. The lectures will commence at 5.45 p.m., admission being free to the public by ticket obtainable on application to the Secretary, Mr. H. Kempton Dyson, Denison House, Westminster, S.W.

NOTTINGHAM ARCHITECTURAL SOCIETY.

THE annual meeting of the Nottingham Architectural Society was held on Tuesday, April 4.

The chair was taken by the President, Mr. R. Evans, junr., F.R.I.B.A.

Two new associates were elected.

The Council reported that the membership now consisted of two honorary members, forty-three members, and thirty-six associates. During the past year two associates had resigned, one member and five associates had been elected, and five associates had been transferred to full membership, making a total of eighty-one, a net increase of four on the previous year. The report also mentioned the result of the visit of Messrs. Hubbard and Cross from the Royal Institute, and urged that it was most desirable in the interest of the profession that all eligible architects should apply for admission to the Royal Institute, either as associates or licentiates, in order to support the proposed Registration Bill. During the winter session interesting papers had been read by Messrs. E. R. Sutton and A. N. Bromley, and the Designing Club had held five meetings.

The average attendance at the general meetings was thirty-two, a decided increase on previous years.

Better attendances and more interest had been shown in the Designing Club attached to the Society.

The Council had revised a scale of professional charges, and these would shortly be issued to the members in practice.

The statement of accounts showed that the financial position of the Society was sound. All subscriptions had been paid, and there was a balance in hand of 711.

Mr. R. Spencer, the Hon. Librarian, reported that he was overhauling the library, with a view to preparing a classified catalogue. There were now eighty-two books in the permanent library, some very valuable ones, and fourteen in the loan section. The library depended largely on the generosity of the members for its additions, and he was pleased to report that during the past year Messrs. R. Evans, jun., A. E. Heazell, A. N. Bromley, W. P. Betts, and R. Whitbread had given several valuable and useful books. They were also greatly obliged to the professional papers and other societies who kindly sent copies of their publications for the reading-room. He was pleased to say that the books in the library had been in more demand.

Mr. W. H. Swann, the Hon. Sec. of the Designing Club, reported that the number of designs sent in for competition was slightly more than the previous year. He hoped the associates would realise the great advantage of submitting designs for criticism and being able to criticise the designs of others, and not be deterred from sending drawings because of a little adverse criticism. There had been five subjects set, and the attendances had been satisfactory. They were greatly obliged to the older members who helped to make the meetings useful by their presence and hints. The following were elected officers for 1911-2: President, Mr. R. Evans, jun., F.R.I.B.A.; vice-president, Mr. E. R. Sutton, F.R.I.B.A.; members of the Council, Messrs. A. N. Bromley, F.R.I.B.A., A. E. Heazell, F.R.I.B.A., H. Gill, M.S.A., F. W. Gregory, H. G. Watkins, A.R.I.B.A., A. Dale, and R. Spencer; hon. sec. and treasurer, Mr. F. M. Royle, A.M.Inst.C.E.; hon. librarian, Mr. R. Spencer; hon. sec. to the Designing Club, Mr. W. H. Swann, A.R.I.B.A.; hon. auditors, Messrs. A. J. Holbrook and H. A. Dickman, A.R.I.B.A.

It was decided to have a summer excursion in July, the arrangements being left to the Council.

THE ARCHITECTS' BENEVOLENT SOCIETY.

THE annual general meeting of subscribers and donors was held at No. 9 Conduit Street on Tuesday afternoon last. In the absence of the President, Mr. Leonard Stokes, the chair was taken by Mr. H. L. Florence. Amongst those present were Mr. T. M. Rickman, F.S.A., Mr. William Woodward, Mr. Rowland Plumbe, Mr. Lewis Solomon, Mr. A. Saxon Snell, Mr. W. Hilton Nash (hon. treasurer), and Mr. Percivall Currey (hon. secretary).

The following annual report of the Council for the year 1910 was received and adopted:—

"The Council, in submitting their sixty-first annual statement, have to report that the sum of 727*l.* 15*s.* has been distributed in eighty-six grants, while the further amount of 250*l.* has been paid to the Society's pensioners, thus making the total sum expended in relief 977*l.* 15*s.*

"Although thirteen new subscribers have been enrolled, the total amount received in subscriptions was below that of the previous year; the actual figures being 702*l.* 0*s.* 6*d.*, as against 709*l.* 9*s.* 6*d.* received in 1909, without including the sums received for subscriptions in arrear or for those paid in advance. Among the new subscribers, the Council have the pleasure to mention the Manchester Society of Architects for 5*l.* 5*s.*, while the Leicester and Leicestershire Society of Architects have increased their annual subscription to the same amount. The falling off in the total amount has been occasioned by the large number of subscriptions which remained unpaid at the end of the year, notwithstanding repeated applications. Many of these overdue amounts will no doubt yet be received; but the Council wish to point out that the consideration of deserving cases would be greatly facilitated if the general body of subscribers were to realise their responsibility with regard to prompter payment. Subscriptions are due on the 1st January.

"The amount received in donations and bequests has fallen much below the average, being, for instance, 109*l.* 15*s.* as against 300*l.* 6*s.* 2*d.* received in 1910. As, however, a credit balance was carried over from the Capital Account (to which all donations and bequests are placed), an investment was made in the purchase of 200*l.* Queensland 3 per cent. Inscribed Stock at a cost of 172*l.* 6*s.*, while at the end of the year the sum of 128*l.* 0*s.* 2*d.* remained in hand.

"Donations have been received from Mr. Leonard Stokes, 21*l.*; Sir William Emerson, 15*l.*; The Merchant Taylors' Company, 10*l.* 10*s.*; Mr. Graham C. Awdry, 10*l.*; Sir A.

Brumwell Thomas, 5*l.* 5*s.*; Mr. Walter Cave, 5*l.* 5*s.*; The Arts Lodge, No. 2751, 5*l.* 5*s.*; Mr. Victor A. Flower, 5*l.* 5*s.*; Sir Lawrence Alma-Tadema, 5*l.*; Mr. Archibald M. Dunn, 5*l.*, and many smaller amounts.

"The Society during recent years has suffered from the death of many of its most generous supporters. The Council greatly regret to add that this number was increased last year by that of Mr. John T. Christopher. Mr. Christopher was not only a generous contributor to the Society, he also took as a member of the Council on many occasions, an active interest in its administrative and philanthropic work, to the consideration of which he was always willing to devote his energy and time. The Council highly appreciate an intimation which they have received from the members of his family, through Mr. Freville Christopher, that they wish to contribute a hundred guineas to the Society as a tribute to his memory.

"The following, being the five senior members, retire by rotation from the Council:—Mr. Benjamin Ingelow, Mr. Henry Lovegrove, Mr. Rowland Plumbe, Mr. William Woodward, and Mr. Arthur Ashbridge. To fill the vacancies caused by these retirements the Council have the pleasure to nominate Mr. T. E. Colcutt, Mr. George Hubbard, Mr. E. B. I'Anson, Mr. A. Saxon Snell, and Mr. W. L. Spiers.

"The thanks of the Society are due to the Royal Institute of British Architects for office accommodation and to the staff of the Institute for their always helpful courtesy in any matter connected with the Society."

Votes of thanks to the five retiring senior members of Council having been passed, the following were elected for the Council:—President, President of the R.I.B.A.; Mr. Charles J. Blomfield, Mr. John Borrowman, Mr. C. R. Baker King, Sir Charles Nicholson, Bart., Mr. G. E. Bond, Sir A. Brumwell Thomas, Mr. Walter Cave, Mr. F. W. Hunt, Mr. Reginald St. A. Roumieu, Mr. Lewis Solomon, Mr. Thomas E. Colcutt, Mr. George Hubbard, Mr. E. B. I'Anson, Mr. A. Saxon Snell, and Mr. W. L. Spiers.

Mr. William Glover (Past President of the Northern Architectural Society) and Mr. T. M. Rickman, F.S.A., were elected Vice-Presidents.

Votes of thanks were proposed and carried to Mr. W. Hilton Nash (Hon. Treasurer) and Mr. Percivall Currey (Hon. Secretary). Both these officers were re-elected.

A vote of thanks was passed to the auditors, Mr. A. Saxon Snell and Mr. C. H. Brodie. For the ensuing year Mr. C. H. Brodie and Mr. Henry Lovegrove were elected to act as auditors.

A vote of thanks was passed to the R.I.B.A. for the use of meeting room; and also to Mr. H. L. Florence, the chairman.

The meeting terminated with a warm vote of thanks being proposed by Mr. William Woodward to Mr. R. Dircks (assistant secretary) for the way in which he conducted the business of the Society.

ILLUSTRATIONS.

PUGIN STUDENTSHIP DRAWINGS.

CONTINUING our series of examples of work submitted by competitors for the Pugin Studentship, 1911, we this week illustrate selections from those sent in by Mr. J. B. Mendham.

LLOYDS BANK, VICAR LANE, LEEDS, AND HUNSLET, LEEDS.

WE herewith illustrate the exteriors and interiors of banking-room of two banks recently erected in Leeds from the designs of Mr. Sydney D. Kitson, M.A., F.R.I.B.A., the President of the Leeds and Yorkshire Architectural Society.

"WHITE HORSES" AND CAST FROM OLD WORK, CHRIST CHURCH COLLEGE, OXFORD.

ON this plate we give examples of modern and ancient sculpture. "White Horses," by Mr. F. W. Doyle Jones, was exhibited at the Royal Academy in 1909. The piece of old work at Christ Church College was discovered recently.

EXTENSION OF SHOP AND HOUSE, COPPERGATE, YORK.

HIS example of provincial street architecture is the work of Mr. W. T. Whincup.

THE ILLUMINATING ENGINEERING SOCIETY.

(Concluded from last week.)

THE LIGHTING OF SCHOOLS.

FOLLOWING the reading of the papers we have already reported, the following discussion took place:—

Mr. R. S. Clay (Principal, Northern Polytechnic) spoke as a representative of the Association of Technical Institutions. Experiments had been made at the Northern Polytechnic with inverted arc lighting, and difficulties had been encountered from the carbons being placed the wrong way up so that the light was not reflected in the desired direction. A satisfactory light had been obtained by arranging the lamps about 4 feet or 5 feet from the ceiling. With inverted arcs, a great deal of light was lost, and consequently in certain rooms he had replaced them with 100 candle-power metal filament lamps, as these were found to give a better distribution for certain purposes. Inverted arcs were specially suitable in drawing schools, because they were almost shadowless. They were also found to be very good in the masonry shop, and also in shops where bright reflecting surfaces were being used. Referring to Dr. Harman's paper, he suggested making use of the distinctness test for estimating candle-power. His instrument maker had made him a small instrument by which he had been able to tell distinctly the amount of light in different parts of a room. It consisted of two pieces of brass arranged like a pair of scissors, one of which had a V cut and the other a circle. By rotating them over each other the V was cut down, and it was possible to estimate the light by the aid of a scale. With regard to Dr. Harman's remarks as to upright and inverted gas mantles, he had tried the latter and found them very much better.

Mr. C. A. Baker (London County Council) pointed out that a standard illumination for class-rooms was rendered impossible through the rooms being used for so many different purposes. In ordinary schools it was the evening class accommodation that had to be considered most of all, and it was a somewhat difficult problem when they had to adopt one kind of lighting which was at all times economical, and yet had to answer many different purposes. The use of 25 volt lamps suggested by Dr. Hickman introduced the question of prime cost of the installation. If a very large number of small points had to be put up, the prime cost would be too high in many cases. He thought they had solved the problem of getting a cheap installation and a satisfactory light at the Haverstock Hill School. This school had only been opened a few months, but it was one of a large number of schools that had been wired during the last few years. During the past five years he had had occasion to light 6 colleges, 4 secondary schools, 18 elementary schools, and 2 special schools, making 30 in all, and some valuable experience had been gained. He was adopting 50 candle-power lamps for the schools as the standard, and for a school to accommodate 900 children the cost was 300*l*. The total candle-power installed was 7,500, and the price per candle-power installed 10*2d*., the candle-power per child's place being 7½. The Council's statistical officers put the number of school children at 886,000, so that the illumination was about 7,000 candle-power to light up the County Council schools at the present time.

He agreed with Mr. Dow that a different order of lighting was required for trade schools. For instance, where seamstresses were learning, and working on dark cloth, one or two foot-candles would be quite unsuitable; five or six foot-candles would be nearer the required amount, and he hoped representatives of other schools than the County Council's schools would speak with regard to this. In the London County Council schools the lamp ends were frosted, and the globe used was a deep one, measuring 14 inches by 6 inches, and the top of the shade was open to let out the heat so that the flexible cords lasted longer. Nobody had given a reason for lighting from the left, but his own suggestion was that it enabled one to avoid reflection from the book surface, which was very noticeable when facing the light. The systematic marking out of lamp positions in relation to the position of the desks as suggested by Dr. Harman did not take place in practice. The desks were usually rushed in at the last moment, and sometimes the lights too, and there was no time to go along the desks and mark out the positions of the lights and fix them. The positions had to be fixed a very long time beforehand in such positions as could be judged were the most suitable from the information to be gathered from the officials who were interested in the matter. In any event, it was always a little bit difficult to find the

best positions in a room that was to be used for different purposes.

Mr. P. J. Waldram, F.S.I., said that as an architect, and as one who had been endeavouring to study the subject of daylight for some years, he desired to tender Dr. Kerr his personal thanks. As Dr. Kerr pointed out, quantitative measurements of the small proportion of daylight enjoyed by interiors was absolutely useless. It varied from month to month, from day to day, and from hour to hour by several hundreds per cent. without materially affecting the usefulness of the light. It might vary in a class between 9 A.M. and 3 P.M. by 300 per cent. without affecting the convenience of those using the light, and in fact without their being conscious of anything but a nice comfortable light the whole time. The human eye had been taught by countless ages of outdoor experience to reduce all excess of daylight illumination down to a moderate level, and it only complained when it was subjected to a glare or when it was called upon to work under those conditions of insufficient light which to our prehistoric ancestors heralded the period of darkness when work had to cease. In addition to the diurnal and seasonal variations, daylight also varied curiously according to the state of the sky—a snowy day in December might be brighter than a wet day in June; slightly cloudy sky gave much more light than clear blue sky, &c. Any attempt, therefore, to measure the daylight of interiors by measurements of the light at any period would be like trying to value the good will of a retail business by counting the number of customers in the shop at a particular moment. The measurements of projected sky area described in the paper are equally untrustworthy. He had measured many rooms, from every part of which an ample sky area was visible, which enjoyed a splendid aspect, but a wretched illumination, and which required artificial light on the slightest provocation. On the other hand, there were rooms (like some of the Law Courts) in which practically no sky was visible, but which enjoyed a good light almost up to sunset on a dull day. This was because the light was reflected from the paper at a high angle; light striking the paper at a low angle did not enter the eye at all. The light of a class-room could be tested roughly by ascertaining whether at, say about an hour after sunrise and half an hour before sunset on a clear day, a good reading light was enjoyed at the worst desk. This was the only test possible to the unaided human eye, and it had serious disadvantages. In the first place, one must either wait for a clear day and be at the class-room exactly at the right time, or else make a proper allowance for the elevation of the sun and the state of the sky. This latter demanded a high degree of skill and experience. Photometrically, however, the daylight illumination of every desk could be rapidly ascertained by comparing it with the illumination of a small portion of the zenith sky. This could be effected by reducing the illumination falling upon a Trotter photometer by means of a ten-inch tube having an aperture which was a certain proportion of the area of a ten-inch hemisphere. This method of measurement originally devised by Mr. Trotter was extremely simple, easy, and speedy. One could measure every desk in quite a large school in an hour or so at almost any time of the day or the year because the proportion of light enjoyed by any interior was constant over all ranges of outside variation. It had recently been recommended in the annual report of H.M. Chief Inspector of Factories for determining the sufficiency of the lighting of underground workshops. The illumination enjoyed by a desk depended upon a large number of factors, such as the state of walls, ceilings, and glass, the height of window heads, and especially the angle at which the light came. These factors were all allowed for in such a proper relative quantitative test and if a number of schools known to be good, bad, or indifferent could be systematically tabulated, it should not be difficult to arrive at a certain minimum standard for the worst desks in the room. Personally, he would be inclined to place that standard at about one-thousandth of the outside illumination measured from the zenith sky at a time when the sun was not either shining directly into nor was being directly reflected into the class-room. It was almost essential that the illumination on the desk should be measured on a surface placed on the actual working slope, and it must be viewed from the natural angle for reading and writing, because a desk and its paper or book might receive quite a large amount of low angle light, but that merely illuminated the scholar's chest; it did not reach the eye naturally, and was a direct temptation to a cramped position. So vitally important was the question of high angle light that he would be inclined to sacrifice a great deal in order to illuminate class-rooms by top lights, and suggested that lantern lights with flat

ceiling lights would overcome many of the difficulties. When top lights were impossible as in the ground floor of two-storey buildings, he would prefer to raise the sill level and to increase the area of the upper portions of the window until the window walls were practically a glazed frieze, broken only by the minimum amount of brick piers required to support the wall and floor above.

Mr. K. Edgcumbe (Messrs. Everett, Edgcumbe & Co.) exhibited a photometer of the Wingen type, in which the standard took the form of an electric lamp instead of a flame. He considered the electric standard had many advantages over the flame standard, the latter taking a long time to settle down, whilst there was the difficulty of having to turn the flame up and down in order to adjust the balance illumination. This must upset the candle-power for some considerable time. There were also difficulties in reading with the flame standard, it being impossible to get nearer than 10 to 15 per cent. when reading the distance between 20 and 30 degrees. In addition to having an electric standard, his instrument was made with an adjustable screen worked by a milled head. The instrument could be laid upon a table or anywhere else, and after adjusting the illumination by the milled head, it could be read off in foot-candles. The instrument also had a daylight attachment.

Mr. E. S. Mortimer, who said he welcomed the advent of the illuminating engineer in connection with school lighting, mentioned an instance in which a so-called engineer had placed all the heating apparatus on the side of the school-room where the windows were, rendering it necessary to open the windows owing to the moisture upon them, and incidentally losing all the heat. That engineer was not an expert, and that was why he welcomed the intrusion of the real lighting expert.

Dr. H. R. Hickman referred to his experience with a Wingen photometer. He marked a school-room out into squares, and found the illumination in each square, but before he got halfway across the room the whole of the light had altered, and he gave it up as absolutely hopeless. He found it impossible to get round the room in half an hour or less. With regard to reflected light from the surface of paper, this was very noticeable when electric lighting was first introduced, and very bright lights were placed high up. It was most painful to sit under and read, especially if the paper was shiny. A roughish paper was best, as it gave off a diffused light.

Mr. T. Abbott spoke as a technical teacher, not in a London County Council school. He had experienced nearly every one of the faults mentioned during the discussion, and the Society would earn the gratitude of technical teachers who did all their work by artificial light, if it would turn its attention to the peculiar conditions under which they laboured. Blackboard glare was a very serious matter; for there was always a percentage of the students who could not see anything on the blackboard due to this cause. For some years the only light in the room in which he was working was a big central light containing four incandescent lamps, which gave very big shadows under the light. There was no light in the corners, and half the blackboard was in glare. There were also one or two fishtail burners over the blackboard and there was some doubt as to where the glare came from. By arranging brown paper screens over the central light the glare on the blackboard completely disappeared. He suggested that it might be possible to improve the lighting of blackboards by the use of tubolite along the tops, provided the light was properly shaded from the students.

The President proposed a hearty vote of thanks to the authors of the papers, and the discussion was adjourned.

A NEW VIEW OF ROMAN LONDON.*

By REGINALD A. SMITH, F.S.A.

AT the present day little excuse is needed for introducing to a London audience any new evidence with regard to town-planning and traffic regulation; for though the present Paper deals with London as it was nearly two thousand years ago, it is meant to illustrate the manner in which the engineering genius of Rome laid down the main lines of traffic in this part of Britain.

Britain was in contact with Roman civilisation a century before the conquest under Claudius, and that period of respite sufficed to show the natives whom they had to fear, and the best means of defending their shores and estuaries against a

surprise attack. Till recent years the attainments of the ancient Britons have been strangely underestimated, and without exaggerating their capacity we may assume that their standard of civilisation was little below that of their Romanised neighbours across the Channel.

To watch the river it was necessary to have a regular roadway on high and dry ground as close as possible to the water, and this was practicable only on the north bank near London. East of the Lea, and a good way beyond London on the south, the banks would be useless for such a purpose; and it is interesting to find the remains of an ancient road running east and west on the brow of the hill just above what is now London Bridge. When that road was first engineered we can only surmise, but it was certainly built or rebuilt by the Romans. The position, however, suggests an earlier British origin, and if this road were to enable horsemen to patrol the river and give notice of any hostile approach by water, then we must imagine it continued, at least westward, along the brow of the steep northern bank, and crossed the Walbrook, which was at that time a broad tidal river running into the Thames at Dowgate Hill. Its subsequent course would be quite conjectural were it not for the occurrence of three Roman burials that exactly indicate a line that is more than probable on other grounds. If the theory holds good a line drawn between these sites should indicate the course of a Roman high road, and the only line that satisfies the conditions runs from Bridge Street, opposite the foot of Pilgrim Street, through the Temple, under Somerset House, between this hall and another hall in the Strand, past the National Gallery on the north (and higher) side of Trafalgar Square, under George III.'s statue and the Waterloo monument, across the south side of St. James's Square and the west end of King Street to enter St. James's Park a little above the bandstand, whence still in a straight line it would follow the high ground to the Tyburn valley. Crossing the stream—no doubt by a bridge as the banks are somewhat steep—it would, in a few yards, reach the south end of Park Lane, and Hyde Park Corner has always been an important landmark. Nor need we give up hope of following it still further, for though connected with the Thames it could not well have crossed the low and then swampy ground south of Knightsbridge; but a road was practicable on fairly high ground to Brentford, which there is reason to believe was the objective of this ancient highway. The former importance of this town may be partly explained by a ford over the Brent and by the fact that here is a stretch of gravel in the Thames bed which made it possible to ford the river at low tide in the days before steamboats rendered a deeper channel necessary. A few years ago Mr. Montagu Sharpe convincingly argued that here was the spot where Cæsar crossed the Thames, and the existence of a large number of stakes in the north bank is in full agreement with Cæsar's own account of the crossing. For him there was only one ford, and that a difficult one, to take him into the territories of Cassivellaunus, and here, if anywhere, would be a British stronghold reached by well-kept roads. The supposed road from Brentford to Hyde Park Corner is practically in the same line as the section from the latter point to the Fleet, and in my opinion both belong to a system elaborated by the ancient Britons for their own safety and convenience. It may be remarked in passing that the road west of the Fleet, which seems to be marked out by the burials with mathematical precision, exactly coincides with the Terrace of the Inner Temple. The whole group of buildings is evidently based on that line, while the Strand frontage is ignored; and if the Terrace is, in fact, a remnant of this early highway overlooking the Thames, the curious alignment is easily explained.

The advantage secured to the Britons by this road would also appeal to the Romans, to whose engineering skill and thoroughness may be attributed the straightness and stability of this secondary highway. Another road of more importance may also have been laid out before the Roman Conquest, but its length and directness point unmistakably to Roman initiative, and at least near London may, without much hesitation, be assigned to the latter half of the first century. Here, as in other cases, a clue to the original course of the road may be gained by producing the straight lines that still exist outside London, but a word of caution is necessary as to the name of Watling Street. In Kent there is no ambiguity, but in the Metropolis the presumed original highway of that name must be clearly distinguished from the street that runs east from St. Paul's to Queen Street. The latter will be discussed in another connection, but at first the Roman highway from the Kentish ports to Chester seems to have avoided the city and crossed the Thames at Westminster, and

* Abstract of a paper read before the Royal Society of Arts.

a straight line in continuation of the fine stretch of Roman road on Shooter's Hill skirts the river at Deptford, crosses the Thames a little south of the present Westminster Bridge, and reaches the southern end of Park Lane, where it may be presumed to have turned into the line of Edgware Road; for a prolongation of that road would almost coincide with Park Lane, and naturally stop at what we have already supposed to have been an important road-junction. This, at any rate, is the solution suggested by a consideration of outer London, and by the observance of the Roman rule that roads run straight unless turned aside by serious obstacles. The Edgware Road is an excellent example, running in a straight line till compelled to swerve in ascending Brockley Hill; and the onus of proof lies on those who would make the Roman roads crooked without weighty and sufficient reason.

In the fourteenth century, when there were probably clearer traces of the Roman highway than there are to-day, there lived a monk named Higden who was connected both with Westminster and Chester, and had therefore probably travelled over great part of the Watling Street. In the *Polychronicon* he described this road as crossing the Thames to Westminster and beyond, westward to a point at which it turned towards St. Albans. That is at least what I consider a fair reading of the text which has been variously translated and interpreted.

From the map it is fairly obvious that Park Lane represents a southern continuation of the Roman road that practically coincides with Edgware Road, and from the elbow in Piccadilly we may suppose the road ran in a straight line to Brockley Hill. Nor is this a mere supposition or tradition; the actual road was struck in 1902, almost exactly in the middle of Edgware Road, opposite Seymour Street. Another discovery, unhappily not so precise, seems to shed fresh light on the intersection of Roman roads at the Marble Arch. In Rocque's map of 1746 is marked the position of a stone against which condemned soldiers were shot inside the Park, civilian criminals being executed at Tyburn gallows just outside. It was described as a Roman "geometric" stone, that is, a stone set up as a landmark by road-surveyors, and probably inscribed with distances to various points. The intersection near the Marble Arch of two important Roman highways (the original Watling Street and that from Romford to Staines) would fully account for the position of the stone which, on the map, lies in the middle line of the avenue.

The east-and-west road is characteristically Roman in its defiance of minor obstacles and adherence to the straight line, but did not actually pass through Roman London. It led from Essex across the Lea to Holborn, along Oxford Street and Bayswater Road over Notting Hill to Brentford, where it joined the British highway already noticed, and thence to Staines and across the Thames to Silchester and beyond. Though its course through Essex and west of Holborn is fairly well established, the intervening portion that skirted the north wall of the city is more conjectural, and it is only in the last few years that indications of the line have been noticed. Even without this fresh evidence, one could guess at its position by producing the line that is fairly clear from Romford to Stratford Town Hall, and this would pass through Old Ford, under Bishopsgate goods station, Finsbury Square, and Smithfield to Holborn Viaduct. Beyond this the direction is slightly altered, but another long stretch takes us in a straight line to Notting Hill.

The two main roads that remain to be considered seem to have met on the Thames bank at a spot always of special importance to London, and probably the site of the first wharf on the north bank of the river. To determine this point we may first produce the lines of recognised Roman roads in the suburbs and then test the accuracy of the method by a survey of the archaeological and historical evidence.

From Ware southwards to Edmonton there can be traced on the map a line that is continuous with the recognised Roman road that coincides with the highway from Edmonton through Tottenham and Kingsland to the city, and the presumption is therefore that the Roman north road from the Thames ran straight from the river at least as far as Ware. Its course would have been under the old Custom House, a little to the east of the present building, and about 100 yards west of the Thames subway at the Tower. Opposite this is the point where the line of Roman road known as Ermine Street, on the Leatherhead Downs, would, if produced, strike the Thames, and this coincidence strengthens the belief that these roads were intended to join at a recognised river-crossing where the Romans doubtless erected a bridge on the site of what seems to have been the lowest ford on the river in British times. It is true that a distance of sixteen miles, between the track on Leatherhead Downs and the river, has

to be covered by conjecture, except for a fragment of the road at Ewell; but if the straight line was preserved over such difficult ground as the Downs above Mickleham, it may justly be inferred that no deviation would occur on the lower ground towards London, and that the point aimed at on the river was in a line with the surviving remnant on the Downs. Some such connection must be found between these two portions of the Ermine Street (called Stane Street between Chichester and Dorking, and deflected by Box Hill), and the course suggested is not only the most obvious but is supported by a certain amount of archaeological evidence.

That the Romans built a bridge to carry their high road across the river at or near the point towards which earlier British roads must have converged, is more than probable.

In support of this theory mention may next be made of Stoney Lane, which runs parallel to, and a few yards east of, the Ermine Street on the south bank. This is an ancient name, and may have arisen from a paved approach to the river at this point, corresponding to Stanegate at Lambeth. There is also a Stoney Street opposite Dowgate, which has led some writers to put the crossing here, in spite of the fact that the Walbrook was then a broad tidal river. About seven furlongs south of the river the road would cross the Watling Street, and in the angle thus formed a large Roman cemetery has been discovered in the burial-ground of a chapel (now Salvation Army barracks) in Deverell Street, New Kent Road; and burials in a similar situation have been noticed at Smithfield.

North of the river the problematic course of Ermine Street is fairly marked out by the burials in Artillery Lane and Bishopsgate Street Without, Goring Street (formerly Castle Street in Bevis Marks), Fenchurch Street, Mark Lane, and All Hallows, Barking; and Billiter Street with Mark Lane may represent the ancient line. But this line is probably not so ancient as the others. It is a curious fact that this route to the north is not mentioned in the "Antonine Itineraries," a military road-book of Britain of somewhat uncertain date, but, in its original form, attributed by the latest writer on the subject to the first decade of the third century, the name being presumably derived from the Antonine Emperor Caracalla (A.D. 198-207). Travellers wishing to reach the north were in that work directed to use the Romford or the St. Albans road for the first part of what was a roundabout journey, and we can safely conclude that the road through Ware was not then in existence. In any case the direct route passed through marshy country on its way to Lincoln, and seems to be the last link in the road system round London. On the other hand, a road, which to all appearance started from the same point on the north bank of the river, seems to have been constructed at a comparatively early date in the Roman period, though no trace of it is to be found in the "Itineraries," no doubt because it was at first merely a branch road. Evidence has already been brought forward to show that the wall round London dates from the end of the third or some time in the fourth century, and the occurrence of burials flanking this road indicates that it was laid out before the building of the wall. East of the Walbrook burials are rare within the wall, but beyond that stream they are plentiful along the line in question; and it is difficult to believe that the Roman authorities would have tolerated burials in that area after the wall was built. Though some of the burials date from the first or second century, there are others with the unburnt body that seem to belong to the period after the change from cremation to inhumation, which, in my opinion, took place about A.D. 250. The houses near St. Paul's, in one of which fourth-century coins were found, would, on this hypothesis, not have been built till the burial-ground was disused and perhaps forgotten, presumably after London became a walled city.

A glance at the map will show that a road was wanted to communicate with the great north-west highway known as Watling Street for conveyance of goods, not to mention troops, from the principal landing-place in London. This end would be served by the road suggested between the Custom House, where it would join the Ermine Street, and Newgate, where it would unite with the east-and-west road and cross the Fleet by one and the same bridge. In this way the detour by Westminster would be avoided; and even if the Ermine Street was in existence when this road was planned, a good mile would be saved by traversing one side of the triangle instead of joining the east-and-west road at Norton Folgate and traversing the other two sides.

This road is marked out as well as any by the burials, and though not a continuation of any known Roman highway, has actually been found about the middle of its course. This line would link up interments in King William Street.

Cannon Street, Cheapside, St. Paul's Churchyard, Paternoster and Warwick Squares, Old Bailey and Newcastle Street, and though the first two sites might be explained as abutting on a still earlier British road, the rest are obviously connected with the Customs House-Newgate road, which has other points of no less interest. Its sloping course leads gradually up the steep river-bank and joins the presumably British road in front of Cannon Street Station. It is just at this point that London Stone originally stood, in the middle of the road about 35 feet south-west of the recess in St. Swithin's Church wall, where a fragment is preserved; and it may well be that the stone stood at the intersection of two roads as the firmly-set "geometric" stone seems to have done at the Marble Arch. The history of London Stone has been traced back for many hundred years, possibly to the tenth century; and it has always been regarded as of monumental interest. Its mediæval history need not detain us; but it is important to notice that when its massive foundations were unearthed by Wren after the Fire, they seemed to him to have formed part of some public building; and tradition has it that this was the mile-stone from which all distances were measured in Britain.

The two roads that met in Cannon Street would probably cross the Wallbrook by a single bridge and part company again on the western side; that on the north passing along Budge Row and crossing Queen Victoria Street between two churches, St. Mary Aldermary, and St. Antholin (now demolished). Excavations in 1869 revealed a road at a depth of 10 feet 3 inches at this spot, nearly in a line with the present Watling Street. For a short distance west of this point our line runs along Watling Street, where it has been found, and the name is more or less appropriate, as this road probably superseded to a large extent the Westminster portion of the Watling Street from Kent, when London had risen into importance. Its connection with St. Paul's Churchyard is indicated by another discovery by Wren. "Upon demolishing the ruins after the last fire and searching the foundations of this Quire, the surveyor discovered nine wells in a row; which, no doubt, had anciently belonged to a street of houses that lay aslope from the High Street (then Watling Street) to the Roman Causeway (now Cheapside); and this street, which was taken away to make room for the new Quire, came so near the old Presbyterium that the Church could not extend further that way at first." A similar row of wells abutted on the Roman road in Cannon Street.

There is another record of flint pavement about 13 feet from the surface, below two layers of burials on the north side of the east end of St. Paul's, and below the pavement fragments of "Samian" ware, evidently of the second century. The remarks on Roman burials near St. Paul's apply still more forcibly to the few found within the walls on the east side of Wallbrook, as in Crooked Lane, on the site of East India House and at St. Helen's, Bishopsgate. On the last site a marble cist was associated with a coin of Constantine II., which might indicate a subsequent date for the building of the Wall; but the point is that no burials seem to have been found in a well-defined rectangular area roughly bounded by the Wallbrook on the west and by Cannon Street on the south. Gresham House would be about the middle of the north side, and the east would be in a line with East India Avenue. It may be accidental that London Stone is at one angle of this enclosure, which has an area of about fifty or sixty acres, closely corresponding to that of a legionary camp. The prætorium or headquarters of such a camp would approximately coincide with the site of St. Peter's, Cornhill, under which massive Roman walls have been found extending westward to St. Michael's Church and eastward under Leadenhall Market. In the opinion of Roach Smith and other well-known antiquaries these were connected with an important public building, and an apsed building resembling a basilica was found under the market. Close by, at the cross-roads, probably the Carfax of London mentioned in two ordinances of Edward III., stood the Cornhill standard, a fountain of such importance as a landmark that distances on milestones throughout England we are told were measured from it as from the heart of the city. There is, therefore, some ground for considering this point the centre of Roman London. The city developed, I suggest, from a legionary camp, no doubt occupied in force at the very outset of the Roman conquest and possibly later by legions on the way to the front, but soon given over to a civil population, which rapidly made it the leading commercial city of the province. It is interesting to note in this connection that St. Peter's claims to be the first Christian church in Britain, and certainly ranked higher than a parochial church in the Middle Ages, for its school was one of four maintained by order of

Parliament in London. Its foundation by Lucius in the second century is, no doubt, fanciful, but there may be some justification for the claim that it was the seat of a bishop or even archbishop in the Constantine period.

There is certainly one, and perhaps more than one, main road in or near London that awaits discovery, but perhaps those already traced will have given pause to the critical historian or archaeologist. To those accustomed to the haphazard road system of modern London, the straight-edge may seem a crude and inadequate instrument for restoring the main routes of the Roman period; but our conquerors had practically a clear field and were addicted to straight roads, even in districts where they found greater natural obstacles than near London; and there are coincidences that seem to confirm the system above described. Other critics may consider that too much stress has been laid on the discovery of burials more or less in line, and may point to several burials in the London area not so arranged and presumably independent of any main road. To these I would reply that interments have been occasionally found in Britain in close proximity to Roman villas, away from main roads, and the erection of tombstones along a main thoroughfare may have appealed more to the well-to-do than to the humbler members of the community, who would be content with an unostentatious burial close at hand.

It is, from the archaeological point of view, regrettable that no Roman cemetery has been thoroughly excavated and recorded in Britain, and that we have to look abroad for much of our evidence of date. Years of patient work at Silchester, for instance, have placed before us a Roman provincial town with realistic effect, but the most useful piece of work there is still undone; the burials of its Roman and perhaps British inhabitants are still unexplored and even undiscovered, and the only consolation is that they are still intact. The records of such discoveries in London are provokingly inadequate, but they have at least been collected and examined, I hope to some useful purpose; and the results obtained may, perhaps, direct attention to this period of our city's history, and rescue from destruction any similar relics of the past that may hereafter come to light.

Sir G. LAURENCE GOMME, F.S.A., the Chairman, opened the discussion. It was, he said, a great thing for Londoners to have an official in the British Museum wholly devoting himself to work of this kind, and devoting himself in a way which showed that he built up his theory, and it was an extraordinarily elaborate theory, from a very long series of observations involving a tremendous amount of research. He himself (Sir Laurence) was one of those holding that Roman London was really the basis of modern London, consequently any research which brought out information as to Roman London must be of the greatest importance. To Mr. Montagu Sharpe's researches must be added the important paper just read. He would, however, like to raise a small protest against one fallacy. Mr. Smith had seemed to base a great deal of his theory on the assumption of ancient British civilisation. There was absolutely no necessity to imagine a pre-existing British road in order to account for Roman roads. It was true that the early Britons had coins and even works of art. But anthropologists know that the Maoris of New Zealand have elaborate works of art; but that does not prove that they were civilised. He would remind Mr. Smith that the Celtic Britons were in the condition of tribesmen, as was shown by the fact that their post-Roman laws were tribal laws. It was not, therefore, likely that they would build roads. Mr. Smith might better have begun his research with Roman roads. The extreme importance of Westminster to London was not its British but its Anglo-Saxon position. The author's theory was that the Romans buried at all events their principal people on either side of the roads leading into their cities. When one considers how London has been dug into and altered and changed, it was remarkable that there were not so few but so many Roman burials in London. To have gone over the map of London and to have selected those burial places as the sites of Roman roads seemed to him a very extraordinary piece of work. When the route of these roads was confirmed by other evidence, it seemed as if they might take Mr. Smith's theory as proved, though he must say that when he saw Mr. Smith's ruler going across other roads he felt rather alarmed. It did not seem safe to neglect the evidence of a modern road when it might help to settling the position of a Roman one. The identification of the Roman camp destroyed by Boadicea was of extreme importance, and afforded an extremely interesting example of Mr. Smith's method of research. It was true it was based on the negative

vidence that burials were not found within that particular sea; but that evidence was very strong, and seemed to be worthy of the greatest consideration. Mr. Smith's paper was one of the most ingenious he had ever heard.

Mr. MONTAGU SHARPE said that he knew of Roman burials considerable distance away from the lines laid down. He would like to know if the author confined his burials to the insular and military roads, or whether he included burials alongside local roads.

Mr. H. B. WHEATLEY characterised the paper as one of the most remarkable contributions to our knowledge of the subject which it was possible to imagine. In looking at the map, one must be struck by the number of early Roman roads, and it was hard to understand what they could want with so many. It appeared to him that the idea of a road with a ridge being built at Westminster in place of one in London was rather extraordinary. It seemed impossible for a bridge to have been built at one time and then to have been so completely lost that the town was content to be without any but London Bridge until the eighteenth century. The point was certainly arguable. The theory gave a shock to one's feelings like that caused by Sir Walter Besant's book, where he made out that Westminster was an earlier town than London. The reason why there was no growth at Westminster was because of the swampy ground. As there was a part of Roman London in Southwark, it did not seem as if the ordinary idea of going across from Southwark to London would be correct. As to the matter of a bridge, it was, of course, a very important point of Mr. Smith's argument that it was built by Britons. But the latter would have difficulties which would not be such to the Romans. For the Romans it was not a question in building a bridge that it should be at the shallowest part of the river, but at the narrowest.

Mr. WILLIAM PAGE (editor of the "Victoria History of London") said that a light was thrown on the question of the early importance of London by the author's remarks as to the course of Watling Street crossing the Thames at Westminster and going on to St. Albans. The goal of Cæsar's invasion was Verulamium, and when Claudius invaded this country, the only spot which the Romans made into a "municipium" was Verulamium. Hence it was the most important town in southern Britain, and probably the most important in all Britain. London first came into prominence through the insurrection of Boadicea, when it was coupled with Verulamium and Colchester. Towards the end of the first century London became of much more importance than Verulamium. Mr. Smith had mentioned that Stane Street from Chichester must have been made about A.D. 300. If that were the case, might not that have been the date of Roman London Bridge?

Mr. T. F. ORDISH pointed out that they knew when London was rebuilt it was rebuilt on the old ways, the alignment of the roads being very much the same. There was, however, an important difference between the lines drawn by the lecturer and those which have hitherto been supposed to be based upon the Roman system. Mr. Smith had indeed given a new view of London, and a most interesting one.

Mr. REGINALD SMITH, in reply, said, the Chairman had maintained that he had exaggerated the standard of civilisation among the ancient Britons; but every year new evidence was turning up, and more might be expected. Until thirty years ago no attention was given to the civilisation of the period. The little they knew about the early Britons should lead them to give the race the benefit of the doubt. There was certainly a Roman settlement at Thorney. Mr. Lethaby had told him that more discoveries had been made during the last few months under Westminster Abbey, including fragments of pavement 3 inches thick, as well as of roofing tiles under the apse of the Confessor's church. When making Queen Victoria Street they found a Roman road about 20 feet from the surface, opposite the Mansion House station. Under the spot where St. Paul's Cross now stands several burials were discovered. Probably the Roman villa at the corner of Cheapside was erected after the Roman cemetery had been forgotten and the site turned into building land. It was not surprising to find there were burials and cemeteries outside London, and not connected with roads at all. London was the key of the road system, just as it is to-day of the railway system. London hardly existed in the first century. Even after it had become an important commercial centre it is quite possible that the roads went through Westminster, just as a railway makes an avoiding line outside a busy centre so that trains can go past the town instead of through it. He felt certain that the Romans did join up the north and south roads by a bridge. London Bridge was heard of in the reign of Edgar. If they did not build it, who did?

UNIVERSITY OF LONDON LECTURES ON ARCHITECTURE.

LEAVING Early Christian churches, with which he had dealt for the last two weeks, Mr. Banister Fletcher took as the subject of his lecture at the British Museum on Tuesday, March 14, the architectural character of the Byzantine style, dating almost contemporaneously with Early Christian work, but developing on totally different lines, and having a strong influence on subsequent architecture, more especially on the Later Renaissance, an influence felt even to this day.

The evolution of the dome on pendentives is essentially a Byzantine feature, developed by the Romans at Byzantium when they came into contact with Eastern methods.

Hitherto the dome had only been used over circular and in one or two cases over polygonal compartments, but the characteristic of the Byzantine dome is that it is placed over a square compartment. The Greek, or Orthodox Church, ever since the separation with the Church of Rome over the "Filioque" question, has adhered to the Byzantine style, which is also to be found in Eastern Europe. The Greek Church in the Moscow Road, also the Roman Catholic Cathedral at Westminster, designed by the late John Bentley, are two modern well-known examples.

There was no great break in constructional methods when Constantine removed his capital from Rome to Byzantium, which had been an old Greek city, but where Greek tradition in the matter of craftsmanship was still very strong. This, naturally, had a very great effect in the development of the style especially felt in the execution of the ornamentation, but Roman methods still continued. Walls were of concrete, lined with brick, or entirely of brick alone, faced with coloured marbles from one inch to an inch and a half in thickness, the slabs being opened out and carefully arranged in order that the veining should make symmetrical patterns over the wall surface, which was thus formed up into panels.

Monolithic columns from all parts of the Empire were used in immense quantities, the bronze rings found at the necking and base serving to prevent the shaft from splitting, since the marble had to be cut in its length and set up contrary to the direction of its natural bed.

Owing to the hot sunny climate, windows remained small.

The Iconoclastic movement in the eighth and ninth centuries is felt to this day in the Greek Church, where all statuary is excluded, and only pictorial images permitted.

In the reign of Justinian a great revival in building took place. S. Sophia (Hagia Sophia = Divine Wisdom) at Constantinople was erected by his command on the site of two former churches of the same name—the first, the basilican church erected by Constantine in 350 A.D., and the second erected by Theodosius in 415 A.D.

The Byzantine style continued at Constantinople until 1453, when the city became the capital of the Turkish Empire.

The style, besides being adopted entirely in the East and remaining characteristic of the Greek or Orthodox Church, spread westward, owing to the trade route through Venice and the Byzantine influence at Ravenna already mentioned. Examples are found in France, and the Church of S. Front, Perigueux, is practically a copy of S. Mark's, Venice, in its architectural character, though it lacks the mosaic treatment to its walls.

The central dome over a square compartment is the chief feature in the Byzantine style, the eye being carried up to an elevated point, and not ranging along rows of columns supporting horizontal entablatures, as in the trabeated Greek style. This dome was not the sole feature, though the most prominent, for it was usually surrounded, often supported by smaller domes or half domes, as at S. Sophia, where the thrust of the big dome is taken by two semi-domes on the east and on the west.

The Church of S. Sergius and Bacchus, with its melon-shaped dome, shows the return to the true constructional use of the column, characteristic of the style. Entire columns, usually monolithic, were once more used to support internal galleries, and not merely for the decorative purposes to which the Romans had for the greater part put them. S. Sophia at Salonica, dating from the sixth century, and S. Theodore at Constantinople, are other examples which the lecturer dealt with.

He then proceeded to explain the principle of the dome on pendentives, and the second, or compound, form which it took later, viz., the raising of the dome upon a drum in which windows were placed to admit light to the interior, a feature seized upon and developed by the architects of the Renaissance period.

The Byzantine dome presents the same appearance externally as internally; that is to say, its outer surface is shown and not hidden by a timber roof.

The openings are either square-headed surrounded by architrave mouldings, like Roman openings, or sometimes circular-headed.

Windows are comparatively simple, light usually being admitted by a ring of windows in the base, or the drum of the dome, or grouped in the gable ends of the building. An example was shown from S. Mark's, Venice.

Stained glass was not used, the interior depending on the mosaic ornamentation for its colour.

The columns no longer supported an entablature, but arches springing direct from the capital, in the design of which a form of the Ionic volute was retained; the Roman capital was also used with the dossier block, as explained in last week's lecture.

The Greek tradition is strongly felt in the craftsmanship of these capitals, as seen in the spiky form of the acanthus and in the deeply-drilled lobes of the leaves. The unending knot, signifying unity, was a very favourite form of ornamentation.

A peculiarity in Byzantine decoration is that the carving is all contained within the outline of the capital, and is, as it were, below the surface, and not in front, as in Greek and Roman work.

A billet moulding usually divided the marble panels which lined the walls or separated the marble lining from the mosaic treatment; otherwise, very few mouldings were used, the bases of columns being generally plain.

S. Vitale at Ravenna was next described, and the Church of S. Sophia at Constantinople. The latter was built by Justinian in the years 532-537, the architects being Anthemius of Tralles and Isidorus of Miletus.

The great central space 107 feet square is crowned with a dome having the same diameter, and supported by four piers 25 feet wide and 65 feet long.

The thrust of the dome is taken east and west by two semi-domes, with smaller domed exedrae abutting upon them.

North and south the thrust is taken by the immense piers or buttresses, which extend as far (north and south) as the semi-circular domes east and west, thus bringing the whole to a square on plan measuring north and south 237 feet and east and west 265 feet, owing to the exedra of the eastern apse.

The church is approached by an atrium and an inner and outer narthex. North and south are aisles over 50 feet wide.

The pendentives which support the dome project over 20 feet from the wall, and are the largest pendentives in the world.

The interior is richly lined with marble and ornamented with mosaic. A ring of forty windows in the base of the drum admits light to the interior.

As seen from the outside, the Turkish tomb houses and minarets are somewhat misleading, as they appear almost to form part of the building.

THE RUSTING OF STEEL INSIDE A CONCRETE COVERING.

ON Thursday, March 9, an ordinary meeting of the Concrete Institute was held to discuss the draft report of the Science Standing Committee on "The Rusting of Steel inside a Concrete Covering." The President (Sir Henry Turner, Kt.) occupied the chair. The essence of the report is as follows:—

Mr. F. E. Wentworth-Sheilds, who presented the report, said that at the beginning of 1909 the Science Committee knowing that there was a great deal of hesitation among engineers and architects about using reinforced concrete owing to the fear that it would deteriorate, and that the steel would rust away, and would cause the reinforcement to fail sooner or later, determined to investigate the matter. They made up their minds to find out whether such deterioration really did take place; whether in course of time steel did rust inside a concrete covering, and if so under what circumstances it took place. They made it their object to, if possible, lay down a set of rules which, if followed, should obviate any such mishap. He would like to say as a preliminary remark that the duty of this investigation was entrusted by the Concrete Institute to its Science Committee, under the chairmanship of Mr. William Dunn, and that

in itself would he thought assure them that the investigation had been undertaken quite free from any sort of prejudice. They had tried as far as possible to get at the real truth of the matter. Although the Institute was composed, to a large extent, of gentlemen who were interested in reinforced concrete and who wanted to see it established, still they felt it was their first duty to make quite sure that their enthusiasm for reinforced concrete did not carry them away and blind them to any defects it might have. Therefore they made a special point of trying to look at the matter from a wholly unprejudiced point of view—to look at the weak points as well as the strong ones, and they spared no pains to ascertain cases where deterioration had taken place as well as to find out those cases where reinforced concrete had been a success. The Council thought that the report was really a matter of such great importance that it would be well to lay it before the members to give them an opportunity of discussing it instead of merely printing it in the Society proceedings. He supposed one of the principal reasons why English engineers and architects had been nervous of using reinforced concrete was that they feared that deterioration might take place, that the steel inside would rust, and the structures so erected would be in trouble before they had been up many years. Therefore he thought it was impossible to overestimate the importance of the enquiry, and he felt sure that the members would like to hear what the Committee had done and discuss the conclusions at which they had arrived. Mr. Wentworth-Sheilds then read abstracts from the report.

Mr. William Dunn said the Science Committee had gone to a very great deal of trouble to elicit information on the subject they set out to investigate. The Science Committee recognised that there had been failures, and their main object in making the enquiry was not to elicit information as to success but as to failures; that they might find out where they were so that they might see them and form some opinion upon the cause of the failures. Broadly speaking, the Committee had come to the conclusion that the failures were preventable, inasmuch as they arose from causes which they could control. He quite sympathised with the fears of many who thought that reinforced concrete was a dangerous material because they could not see the steel. It was said that in a bridge the steel could be seen, and then if rusting took place it could be either repaired, replaced or painted or it could be taken away altogether, but in reinforced concrete work that could not be done, and the material on which they depended for their stability might rust away and lead to sudden disaster, such as happened at the Charing Cross Station some years ago. He did not think they need fear such an occurrence with reinforced concrete, for it should be remembered that the steel would not rust away without producing an expansion of the material which tended to burst the concrete. At the Southampton Docks, which were visited by the Committee, wherever the rusting was taking place it was accompanied by bursting or fractured concrete. That should satisfy engineers that if rusting was taking place the damage would be apparent. The Committee had endeavoured, and he thought successfully, to be impartial in their report, and not to take any biased or partial views. In speaking of old examples of reinforced concrete there was an example not much known which existed in London, near Islington Green. It was built by Philip Bransen. He (Mr. Dunn) visited that building some time ago, and while he could not visit it internally, it was evidently a reinforced concrete building of very considerable age—probably it dated from about the year 1870. It showed cracks across it, particularly in the sides between the window-heads and the sills. That was the trouble with reinforced concrete, and when those cracks were not attended to they looked alarming. When they came to look into the cracks they meant very little. They must learn to discriminate between the cracks which were dangerous and the cracks which were not dangerous. He did not see any particular remedy in sight for these cracks which were merely disfiguring; he thought, however, they knew how to avoid cracks which were dangerous. In France the Committee discovered many examples of reinforced concrete work which they were very astonished to see by reason of the degree of finish which they had got. He thought probably that when our people here got more accustomed to the material we should get the same high finish as they got in Paris. The building in Lincoln's Inn Fields, which the Committee had reports upon, was a very interesting example of reinforced concrete work. He was invited to go and see it at the time the building was being pulled down, but unfortunately he did not take advantage of the opportunity. He had previously inspected the building in

company with the architect, and it certainly was an extremely interesting example and one in which he thought reinforced concrete was in a very excellent condition.

Mr. Laurence Gadd, F.I.C., said he thought the report was a most interesting one, and he was thoroughly in agreement with the conclusions at which the Committee had arrived. Speaking broadly, they had come to the conclusion that under normal circumstances reinforced concrete structures were perfectly stable provided reasonable precautions were taken in the making and the placing of the concrete. Personally, he was very much interested in that portion of the report which dealt with the danger arising from stray currents of electricity. Published results showed that even small currents might have serious effects. He had not seen the jetties at Southampton upon which the Committee had reported, but he had examined some of the specimens and thoroughly agreed with the Committee that the danger was probably attributable to electrolytic action. Recently Mr. C. P. Taylor and himself had been conducting some experiments, and although they were not nearly completed, the results so far obtained were, he thought, of sufficient interest to warrant his giving a short description of them. The method of the experiment was to imbed a $\frac{3}{8}$ inch rod of iron inside a solid cylinder of concrete. The concrete was composed of three parts Thames ballast, two of fine flints, one of building sand, and one of cement. A current of electricity which was carefully regulated to 1-10 ampere was continuously passed through the blocks; the blocks themselves standing in sea water, about three-quarters of their height being immersed. The experiments were commenced on the 10th of last month. On the first day the anode block was found to have the surface stained for a considerable distance round the rod. Gas was evolving and the rod forming small bubbles. In the cathode block gas was given off rapidly from the immersed surface, especially on the side facing the anode block. The following day the anode block showed black and red stains which covered the whole surface of the top and extended down the side to the water which was much discoloured with iron rust. A quantity of ferro oxide was found on the bottom of the tank. On the cathode block a white substance was found on the immersed portions. The next day the anode block showed a small crack near the top and it was thickly coated with black and red oxide. As time went on the symptoms were aggravated for about ten or twelve days. On the 20th he broke the blocks open, and the appearance of the reinforcement was very curious. The concrete was very hard and very difficult to break open. The anode block was eaten away at the surface of the concrete. The oxide scale extended an inch down, but the concrete was stained a yellowish colour about two inches down into the body of the block. That tended to show that where they had a continuous current of electricity of 1-10 ampere almost immediately within an hour or two they had rusting of the reinforcement. They were now repeating the experiments with some modifications. The most interesting modification was that the experiments would be carried out under the same conditions only they were passing an alternating current of electricity through the blocks in place of a continuous current. The experiment had been going on for about ten days, and so far no rusting appeared to have taken place. He had one of the blocks cut open that day and found the rod perfectly intact and the concrete did not show the slightest trace of rust.

Mr. C. S. Meik, M.I.C.E., said he thought the report of the Committee was very satisfactory, as it would allay the fears of many engineers and others in this country as to the safety of steel inside concrete. Having worked with concrete for forty years he had never had the slightest doubt about its safety, and when he took up reinforced concrete work he never had any fear of rusting taking place provided the concrete was properly made. In his opinion safety was only a question of making the concrete properly. His experience showed him that the heavier they got their concrete the more impervious it would be; and he would strongly advise members of the Institute to get a concrete that weighed at least 150 lbs. per cubic foot irrespective of steel work. He had had a substance lately brought before him called "Ironite," which had been used in America and tested in this country. That was a material which if laid on the concrete or mixed with it made a practically impervious mixture and prevented any water getting in. With regard to the corrosion which the Committee found at Southampton Quay, he was entirely at one with them in the conclusion they came to—that it was the result of electrolytic action caused by the

electric current finding its way through the ground to the steel work.

Mr. D. B. Butler, A.M.I.C.E., remarked that he wished to add his word of thanks to the Science Committee for the valuable report they had published. He regarded their conclusions as extremely important, and he thought the report should at last lay at rest the old bogey that rusting occurred inside properly made concrete. He thought it might be accepted as a fact that with properly made concrete rusting could not occur. Some of the instances given in the report where failures had taken place owing to the steel rusting were very interesting. In one case he noticed that the steel was badly rusted, and the cause was ascribed to the concrete being made of coke breeze. Unfortunately, there was no information at hand as to whether it was real coke breeze that was employed or whether it was material that was commonly called coke breeze. Some of them might be aware that he (Mr. Butler) read a paper before the Society of Architects as to the use of breeze in concrete, and he there mentioned that nowadays breeze had come to mean almost any kind of furnace refuse, and there was no doubt that some kinds of that breeze were extremely dangerous to use for concrete. Another case of failure was ascribed to insufficient punning, and to the fact that the rods were not washed with cement grout. His experience taught him that it was not always necessary to do that; in fact, it was best not to do so unless it was done immediately.

Mr. D. G. Somerville remarked that it was of the utmost importance that this question should be thoroughly investigated, because this matter of rusting was practically a daily matter of conversation amongst engineers and architects. He was very interested in what the report had to say about the Town Quay at Southampton. He carried out a second contract there about three years ago, and in connecting the new dock to the old they had to cut away the concrete, and when they opened the work the steel rods were found to be totally unaffected.

Mr. E. P. Wells said he could only repeat what he had said at meetings of the Institute before, viz., that so long as there was a proper covering to the steel it did not matter whether moisture got in or not. Under such circumstances he had never known of oxidation taking place, but if they allowed air to get in, and with it possibly sulphur, then of course oxidation would occur. If their reinforcement was made with good coke breeze the steel inside would not oxidise, but if it was made of compounds which were called breeze which contained a lot of ashes and clinker, they could not depend upon it. There were cases under such circumstances where oxidation had not occurred, but he should say that in 99 per cent. of such cases where the ordinary breeze compound was used mischief was bound to take place. Wherever they got a proper cover, and the concrete was good and free from sulphur, there was no doubt that steel and concrete would last—well he would not say for ever, but it would last sufficiently long for this generation and the next, and he should say for another generation on the top of that.

Mr. Alfred Brooks, J.P., said that speaking as a manufacturer he wished to say how warmly he welcomed the report of the Science Committee. He was sorry that Mr. Bamber was unable to be present, because he had taken a great deal of interest not only in the work of the Committee but in the whole subject. This question of the possibility of the rusting of steel in reinforced concrete work was not confined to this country. In January 1907 he was present at the opening of the fine new buildings of the American Society of Engineers in New York, and he was introduced to the chief engineer of the Edison Power Company in that city. He asked him (Mr. Brooks) if he knew whether the reinforcement rusted, and he told him that as far as their experience of it went, they had not discovered any such action. He told him that he knew of many cases where they had had to cut up old work and that they had always discovered the steel or iron which was imbedded in the concrete to be in the very best possible condition. He then told him (Mr. Brooks) that the roofs of the power house of the Edison Power Company, which was also used as a tank for water, very shortly after it was built showed signs of serious corrosion taking place. He (Mr. Brooks) told the chief engineer that he was very surprised to hear that, and suggested that possibly electrolytic action might explain what was taking place, and he promised to make investigations to ascertain whether he could find anything similar going on in any of their own works in this country. To that end he had caused careful enquiries to be made at their various electric-power houses where they had reinforced concrete work in the immediate proximity, and in no case could they

find any such action going on. He wished to say that none of the buildings were situated in damp places. Apparently they needed to have the concrete in the neighbourhood of water, where the electric current would have a tendency to run through the concrete. At their own works at Northfleet, some two years ago, they cut into a reinforced concrete chimney right down to the reinforcement, to see if under such circumstances any corrosion had taken place, but in no case could they find any corrosion going on in the reinforcement. Wherever they were able to cut it open they found the steel in perfect condition. Generally speaking he could confirm the conclusions of the Committee—that where there was no electrolytic action they need fear no damage whatever to their reinforcement, assuming of course that it had been carried out in a satisfactory manner and that they had not left voids, so that the cement itself was still in contact with the steel.

Mr. W. G. Kirkaldy, A.M.I.C.E., said it had been his good fortune never to find any rusting in the steel of reinforced concrete work all the years he had had to deal with it. In his opinion it was all a question of care in the filling in of the concrete. If the material was properly proportioned, and well put in, he could not see that any rusting could take place, except of course, from electrolytic action.

The President said he thought their thanks were due to the Science Committee for the great care and trouble they had taken to produce their report. It seemed to him that there could be no doubt that steel was perfectly satisfactory if it was imbedded in a sound concrete. It ought always to be so imbedded, but often it was not, and that was where the trouble came in. He thought, however, that everybody was getting more and more accustomed to making a sound concrete and that they were not likely to run the risk which they formerly did. They had made some experiments, including the placing of some columns of reinforced concrete in the pond at St. James's Park, where they had been for several months, and on examination they showed no signs of rusting.

Mr. Wentworth-Sheilds, in replying on the discussion, said it had been extremely interesting, because it had showed that on the whole the members present agreed with and appreciated the report which the Science Committee had laid before them. Mr. Gadd's experiments were extremely interesting, and he was sure they would all look forward to hearing of his further results with great interest, and perhaps he would give them the benefit of those results in the form of a paper at a later date. The Committee felt that they had not thoroughly investigated the question of electrolytic action. It was a matter that wanted to be looked into very carefully, and of course it was difficult to make a report on any subject absolutely final and perfect. This report of the Science Committee was only an interim one, but with the exception that they did not quite know the extent of the danger from electrolytic action, he thought they had cleared the field. They felt they had been able to absolutely lay down proper precautions, which, if taken, removed all fears of deterioration. Mr. Meik's remarks about the density of concrete were extremely interesting. He (the speaker) was sure he was quite right in what he had said, but it must be borne in mind that the rule would have to be subject to modification sometimes. While a heavy concrete was desirable, it was not advisable to have too large stones—in fact if they wanted their reinforcement to be durable, the finer the aggregate the better. Mr. Meik had also referred to a new substance called "Ironite," and had told them how desirable it was to get something which would make the concrete impervious. The Committee had considered the desirability of adding some material—in fact a coating of tar was suggested for protecting marine work, but it was felt that people might not like using tar, and so it was thought best to say nothing about the material, but simply to lay it down that in certain cases it was desirable that the concrete should be covered with some impervious coating as an extra precaution. Mr. Wells seemed to think that it did not matter whether moisture got in or not, provided that the concrete was well made, and that therefore it did not matter whether it was impervious. He (the speaker) did not want to answer that point himself, but he thought the view of the Committee was that moisture should certainly be discouraged. No doubt there were places where the concrete could be moist and the steel not suffer, but of course directly they got anything like electrolytic or chemical action then the presence of moisture made that action more virulent, and it was for that reason that the Committee emphasised the necessity for making the concrete non-porous

and avoiding any circumstances which would tend to make it damp, because although the reinforcement might not suffer owing to the damp, it was better to keep it out. In conclusion, he wished to say that it was very gratifying to the Committee to find that their report had been so much appreciated and that it had provoked a very interesting discussion.

The President announced that the next meeting would be held on April 6, when Mr. P. Taylor would read a paper on "The Reinforced Concrete Pier at Swansea."

Reinforced concrete will last as long as plain concrete in any situation provided that certain special precautions are taken during its construction. The precautions to be taken are as follows:—

Concrete.—The materials (cement, sand, and stone) must be of good quality. They must be most carefully and thoroughly mixed and scientifically proportioned, so as to be practically water-proof and air-proof. The mixture must be fairly wet and must be well punned into position so as to minimise voids. The aggregate should be as non-porous as possible, and any aggregate which is known to have a chemical action on steel should be avoided. The aggregate should all pass through a $\frac{3}{4}$ inch mesh. The concrete covering should in no case be less than $\frac{1}{2}$ inch, and it is suggested that if round or square bars be used the covering should not be less than the diameter of the bar. In structures exposed to the action of water or damp air the thickness of covering should be increased at least 50 per cent., or the size of the aggregate should be reduced so as to insure a dense skin. In the case of structures exposed to very severe conditions, the concrete might be covered with some impervious coating as an extra precaution.

Steel.—The reinforcement should be so arranged that there shall be sufficient space between one piece and its neighbour to allow the concrete to pass and to completely surround every part of the steel. All steel should be firmly supported during the ramming of the concrete, so as to avoid displacement. It should not be oiled or painted, and thick rust should be scraped and brushed off before placing.

General.—The scantling of the various members of the structure should be sufficient to prevent excessive deflection. If electric mains are laid down, very great care must be taken that no current is allowed to pass through the reinforced concrete. Fresh water should be used in mixing, and aggregates charged with salt should be washed.

These recommendations have regard only to the prevention of corrosion of steel and not to fire-resistance or any other property of reinforced concrete.



[The Editor will not be responsible for the opinions expressed by Correspondents.]

Pulchritudo Pulchrior.

SIR,—The Vicar of St. Stephen's, Hampstead, or one of his predecessors, is to be congratulated upon having furnished the sanctuary of his church with some very delightful and appropriate candlesticks, delightful and appropriate as possessing that warmer and more human beauty which comes of irregularity of line and surface, an irregularity which, whether it be due to time or incapacity or intention, renders old buildings and furnishings far more attractive than new ones.

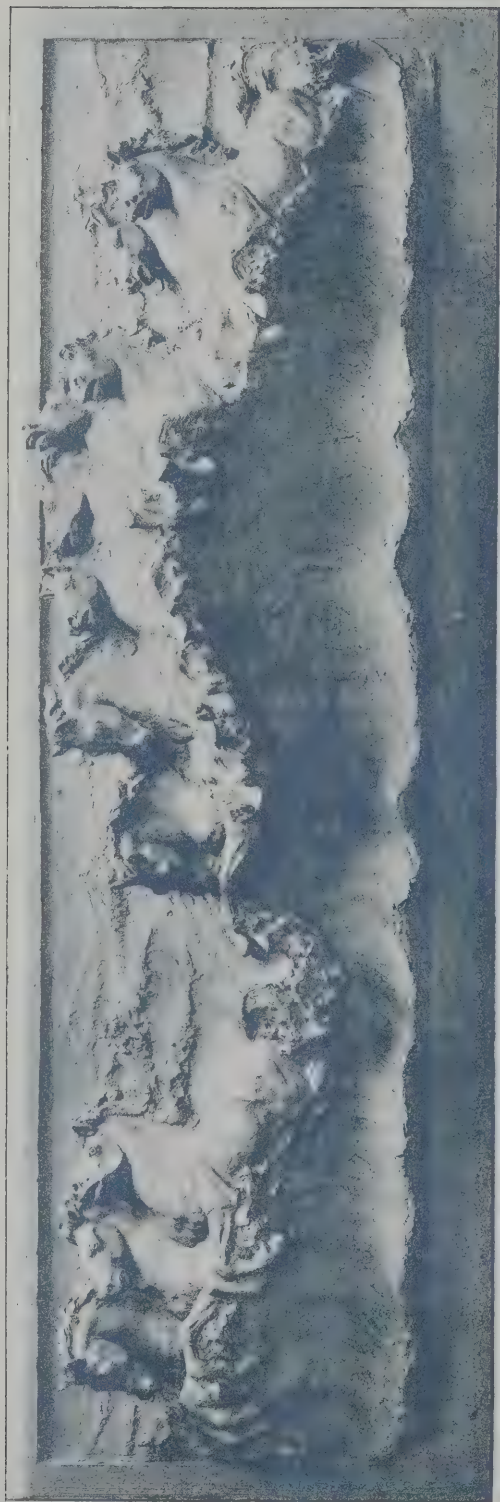
S. CLAUDE TICKELL.

25 Carlingford Road,
Hampstead, N.W.: April 12, 1911.

A CHURCH is to be built in Bolton at the corner of Thomas Holden Street and Chorley Old Road in connection with the St. Barnabas Vestry.

THE Birmingham Town Council have given notice of their intention to provide a public elementary school for about 1,000 children at Belcher's Lane, Bordesley Green.

THE Royal Academy of Arts give notice that they will elect, in May next, a Turner annuitant. Applicants for the annuity, which is of the value of 50%, must be artists of repute in need of aid through the unavoidable failure of professional employment or other causes. Forms of application must be sent in by the 29th inst.



"WHITE HORSES" (*Kipling*): OXIDIZED SILVER RELIEF, R. A. EXHIBITION, 1909.

Mr. F. W. DOYLE JONES, Sculptor.





PHOTO BY CHAS. R. H. PICKARD, LEEDS.

INK-PHOTO SPRAGUE & CO. L. 4 1/2 EAST HARDING STREET, FETTER LANE E.C.

EXTENSION OF SHOP AND HOUSE, COPPERGATE, YORK.

MR. W. T. WHINCUP, Architect.



PHOTO BY CHAS. R. H. PICKARD, 5 PARK LANE, LEEDS.

"INK- PHOTO" SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

LLOYDS BANK, VICAR LANE, LEEDS.

MR. S. D. KITSON, F.R.I.B.A., ARCHITECT.



PHOTO BY CHAS. R. M. PICKARD, 5 PARK LANE, LEEDS.

FROM THE PHOTOGRAPH BY CHAS. R. M. PICKARD, 5 PARK LANE, LEEDS.

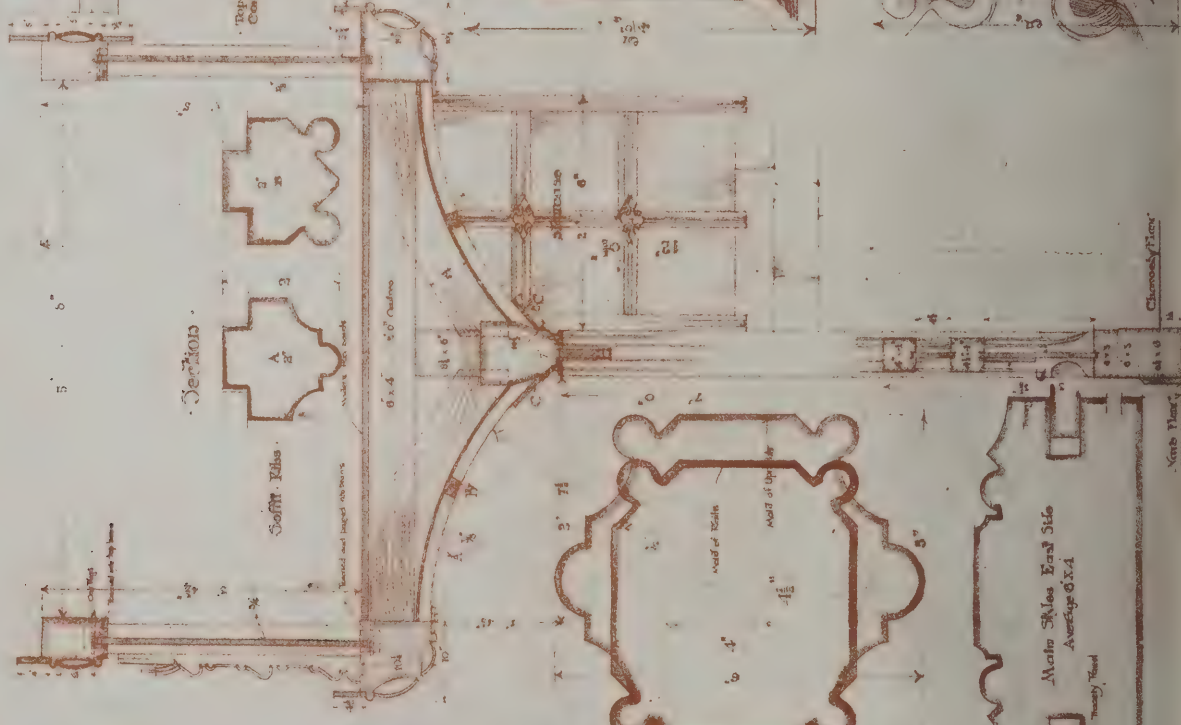
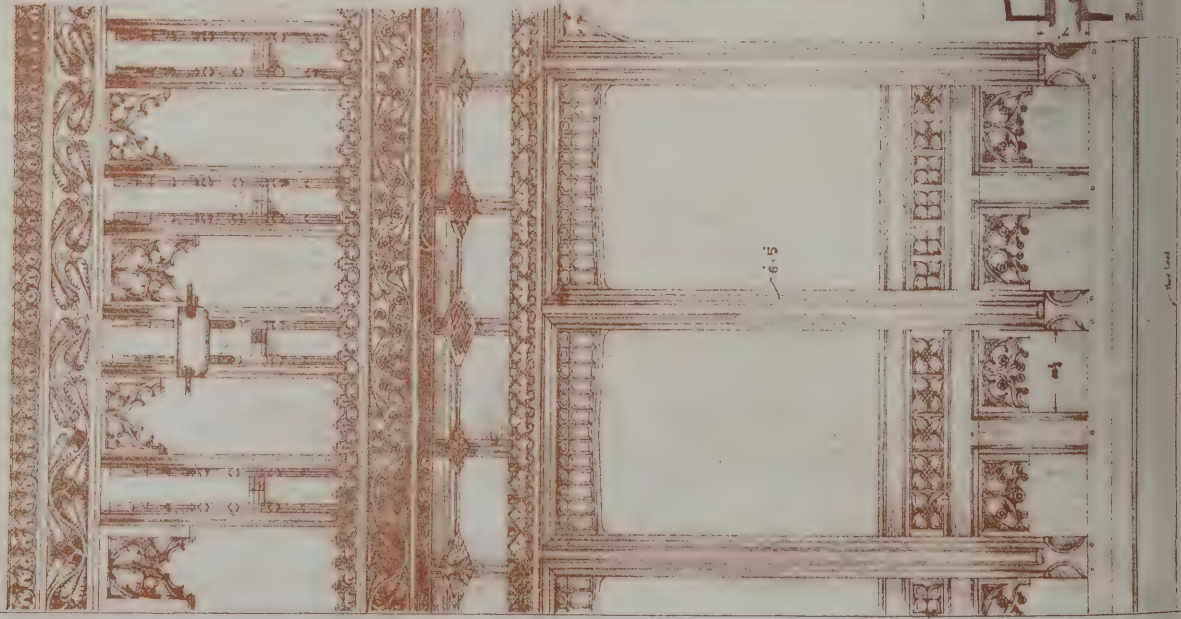
LLOYDS BANK, HUNSLET, LEEDS.

Mr. S. D. KITSON, F.R.I.B.A., Architect.

The Architect, April 14th 1911.

Road Screen Monoglyph Church, N. Wales.

West Wall, Division of Two Bays.



Top Half Upper Gothic East.
(Also of G.O. Section)



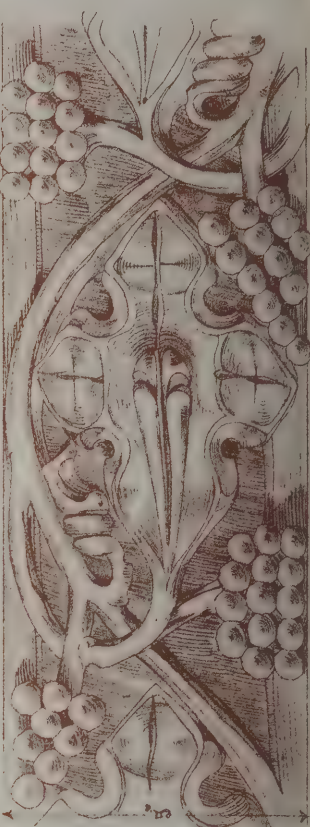
Top Half Lower Gothic East.



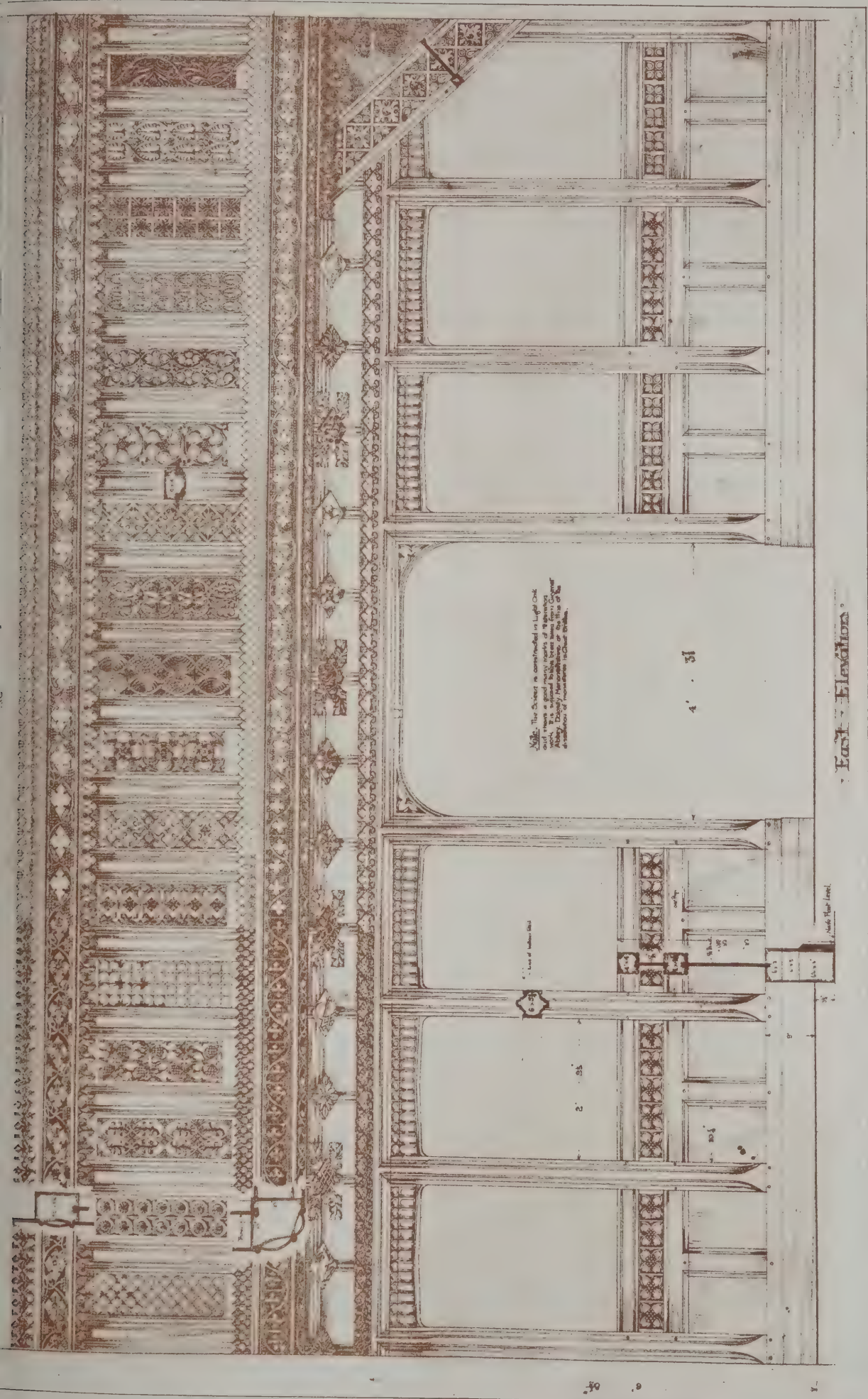
Bottom Half of Upper Gothic East.



Bottom Half of Lower Gothic West.



Main Sides East Side
Average 6' x 4'



Note: The Student is constructed in Light Oak and is a good example of the design of the Abbey. The design is a combination of the design of the Abbey and the design of the Student.

East Elevation

"INK" PHOTO SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE E.C.

DRAWINGS SUBMITTED FOR THE PUGON STUDENTSHIP, 1911.

By MR. J. B. MENDHAM.

The Architect.

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FORTHCOMING EVENTS.

Saturday, April 22.

Building Trades Exhibition, Olympia, opens April 22—May 6.
Institution of Municipal Engineers: Meeting of the Eastern District at Cambridge.

Monday, April 24.

Architectural Association: Professor Beresford Pite on "Alberti and Bramante: Architecture a Profession or an Art in the Cinque Cento."

Surveyors' Institution: the adjourned discussion on Mr. W. R. Baldwin Wiseman's Paper on "The Conservation of our National Water Resources," and on Mr. W. Vaux Graham and Mr. H. F. Bidder's Paper on "Judicial and Parliamentary Decisions with regard to Rights in Underground Water since 1907," will be resumed.

Illuminating Engineering Society: Mr. Haydn T. Harrison on "The Rates of Light to Illumination," and Mr. P. J. Waldram on "Some Notes on the Effect of Wall-Papers upon the Illumination of Interiors."

Friday, April 28.

Society of Architects: Twenty-seventh Annual Dinner to be held at the Holborn Restaurant.

THE BUILDING TRADES EXHIBITION.

THE exhibition which opens to-morrow promises to be as useful as any of its forerunners for the particular purpose which it has fulfilled in the past and which is really its only *raison d'être*, that is to afford manufacturers and traders an opportunity of showing, and architects and builders an opportunity of seeing whatever is either new or good in the materials and processes connected with up-to-date building.

The poster of the exhibition with its promise of the House Beautiful and AMOR entering the Agapemone has suggested to some that the Building Trades Exhibition is on the way to becoming a popular show. This would be to revert to the bad old days at the Agricultural Hall, when the exhibition endeavoured to combine the pleasure of the populace with the business of the professional, to the detriment of both. Hence the series of failures from which Mr. MONTGOMERY rescued the concern, culminating in the successes of 1907 and 1909 at Olympia. We should therefore deeply regret to see any introduction of the popular element even to the limited extent of the happy home and the 150*l.* cottage.

We are assured by the promoters of this year's exhibition that everything not germane to the building trades has been refused admittance to Olympia, and that there will be no bands this year, as objection has been taken to these by some exhibitors in the past as being detrimental to business. Neither have there been arranged by the promoters any papers or lectures to distract the attention of visitors from the contents of the stalls and stands. An improvement from the exhibition point of view has been made to Olympia by the removal of the wall dividing the annexe from the main building, thus enabling the numbering of the rows to be carried through consecutively from top to bottom.

There does not appear to be any outstanding or epoch-making novelty to be found in the exhibition, though in very many instances there are improvements in manufacture which mark progress. These we shall have occasion to notice when the exhibition is open.

The only exhibits to which our attention has been called as novelties are a model cottage and a model of a warship. The former has been erected by Messrs. CORNES & HAIGHTON in conjunction with a number of other firms, in order to furnish "an example for Garden Cities, Model Villages, and Municipal Housings," which can be built in brick "for 220*l.* detached, or in pairs at a reduced figure."

Messrs. PARSONS exhibit the model of "H.M.S. Endelline" as an attraction for their show of paint and enamels. We can quite understand that misgivings have arisen when such histrionic appeals to popular interest are features of the Building Trades Exhibition. If this is purely a business concern, can it be imagined that any

architect will specify or any builder use a particular enamel paint simply because it is advertised and illustrated by a pretty and cleverly executed model of a warship?

Neither the 220*l.* cottage—the price has risen since the early Letchworth days—nor the model battleship look to us like genuine business of the building trade. The professedly 150*l.* cottage and the garden city house have done a great deal of harm to the art of architecture and to honest building by implanting in the mind of the British public the idea that cheap and pretty houses can be obtained for next to nothing.

Nor are we impressed with the advantage from a business point of view of the fact that the Hammersmith Road entrance to the exhibition has been fitted up as a sort of lounge. We fancy the exhibitors prefer that visitors shall lounge at their stands rather than anywhere else.

We regret that the collection of architects' drawings, which has been a feature of the Building Trades Exhibition on several past occasions, is not included this year. There are so many good drawings produced each year in architects' offices for which there is not room at the Royal Academy, that an exhibition at least once in every two years is almost a necessity. Certainly such a collection interests architects and attracts them to the exhibition, and architects, we take it, are amongst the visitors whom the bulk of the exhibitors most wish to see at their stands rather than the ladies who may be moved to enthusiasm, more or less real, by pretty cottages and models of warships.

Although we do not admire the type of exhibit to which Messrs. CORNES & HAIGHTON and Messrs. PARSONS are treating the public, we have nothing to say against their enterprise if they think they are likely to get business thereby, but we think that such a show as that of the United Stone Firms, who have gone to considerable expense in order to show the capabilities of their materials, is more useful to the expert visitor and more strictly germane to the functions of a Building Trades Exhibition.

The list of official visits is longer this year than at the last previous exhibition. A number of invited members of the Royal Institute of British Architects and members of the Architectural Association will be present to-morrow, the opening day. On Monday, April 24, the Surveyors' Institution have their visit; on Tuesday, April 25, the Institute of Sanitary Engineers; on Wednesday, April 26, the Institution of Heating and Ventilating Engineers; on Thursday, April 27, the London Master Builders' Association, the Institute of Builders, the Pressed and Stock Brick Makers' Association; on Friday, April 28, the Royal Sanitary Institute; on Saturday, April 29, the Institute of Municipal Engineers, the Institution of Municipal and County Engineers, and the Swedish Institute



FROM A PICTURE BY DOMENICHINO.

of Clayworkers; on Monday, May 1, the Concrete Institute; on Tuesday, May 2, the Institute of Clayworkers; on Wednesday, May 3, the Society of Architects. The Glazed Brickmakers' Association, and the Hospital Officers' Association are also expected to pay official visits on dates which, at the time of writing, have not yet been fixed.

These official visits are good features, as they undoubtedly bring more visitors of the right sort than would otherwise attend. We should advise exhibitors to make note of the times of these visits and to take care that at those times their stands are in charge of competent attendants.

NOTES AND COMMENTS.

THERE is likely to be some dissatisfaction amongst unsuccessful competitors at the result of the competition for Coventry Municipal Buildings and proposed Town Hall. As we announce elsewhere, the design of Messrs. GARRATT, SIMISTER, BUCKLAND & FARMER has been placed first. On several occasions Messrs. GARRATT & SIMISTER have sent designs that have taken a high position in competitions, and so also have Messrs. BUCKLAND & FARMER. In the answers to competitors' questions it was stated with respect to the now usual condition that designs were to be prepared by each architect competing and his regular assistants only, that "It is expressly intended to prohibit temporary partnerships and arrangements merely for the purpose of the competition."

TRUE, the answer goes on, "Where two firms of architects are in partnership it is a different matter, and no objection would be raised in this case to the submission of a joint design." This is a most unfortunate paragraph. If two firms join in partnership they are no longer two firms, but one. If two firms join together to send in drawings for any particular competition, they are in a partnership of a temporary character which "it is expressly intended to prohibit."

WHAT the original clause, as now usually inserted in competition conditions, does intend to prohibit is the employment by a man with money but insufficient brains or time for the winning of a competition of a man with brains but insufficient money, in short, of a "ghost." There can be no question of such an arrangement between Messrs. GARRATT & SIMISTER and Messrs. BUCKLAND & FARMER. But the explanation that in this competition it is expressly intended to prohibit temporary partnerships is certainly likely to cause trouble, and it may be very pertinently asked, At what date did the announcement of the partnership of Messrs. GARRATT, SIMISTER, BUCKLAND & FARMER

appear in the *London Gazette*? And the Council of the city of Coventry, together with the assessor, are entitled to ask for production of the stamped deed of partnership of the new firm in order that they may be satisfied that the conditions of the competition have not been violated.

To destroy a spire for the sake of its lead in order to pay for the repair of a church tower is indeed a futile proceeding, and we sympathise with the concern of Dr. Cox that such a fate should be threatening the church of Great Baddow, near Chelmsford. Here it seems ivy has once again exercised the destructive influence for which its picturesqueness is no adequate recompense. We admit that an ivy-clad ruin is picturesque. There is no doubt about the ruin, but churches that have served for ages as places of worship, and still so serve, are better fitted for their function if they are not ruins. So ivy must go.

THE Imperial Arts League, from the reports of the Secretary and Hon. Treasurer which were presented at the second annual general meeting, appears to be making very satisfactory progress through the difficulties that oppress such an institution in its early career. The various formalities that have to be gone through and the objections of official bodies that have to be overcome are many and troublesome. Hence we are glad to hear that the League is now within a measurably short distance of being incorporated with a limited liability to its members. The advance in membership from 600 to 800 is also an encouraging feature.

MR. H. C. CORLETTE, the Hon. Treasurer, was able to present a satisfactory report on the finances of the League, in spite of the heavy extraordinary or non-recurring expenditure entailed by preliminary organisation and incorporation. This result was in part achieved by the admission of life members, an expedient that is not without ample precedent, but is nevertheless financially unsound, as it means the exhaustion of capital, to obtain which continuing obligations have been incurred. We are pleased, therefore, to note that the Council of the League recognise this and propose to repay from income the capital thus expended, and for the future to devote amounts received for life subscriptions to an Endowment Fund. It is clear from the report of the general meeting and from the *Journal* that the Imperial Arts League is on the way to do good work for artists.

GLASGOW'S Corporation seem now to intend trying to run the crusade against consumption as a national memorial to King EDWARD in opposition to the Edinburgh scheme for Holyrood, and has adopted the report of its representatives at the late Edinburgh meeting suggesting



that the Lord Provost of Glasgow should be requested to convene a meeting of representatives of town and county councils to consider the subject of a memorial. The request is fairly open, but it seems to us that the meaning of it is that as Edinburgh will not adopt the form of national memorial that Glasgow wants, the latter intends to try and take the lead and push forward its own project as a national one.

THE present popular interest in Housing and Town Planning may be expected to evolve some differences of opinion, and, as with all popular movements, there is a danger of rushing off too far on one tack and oversteering the mark, the best housing for the people. Just now the Garden City holds the imagination of the general, and hence it is not surprising to find that when the Sheffield City Council passed a resolution recommending the Sutton Trustees to spend their proposed 50,000*l.* grant to the city in block dwellings a meeting convened by the Federated Trades Council passed the following resolution: "This town's meeting strongly protests against the action of the City Council, at its March meeting, recommending the trustees of the late Mr. W. R. SUTTON to build block dwellings for Sheffield workers, and desires to place on record its conviction that money spent by the above trustees on cottages in the suburbs would be greatly appreciated by Sheffield people."

Of course the trades unions want the advantages of the Sutton bequest for their own members. But the block dwellings are not to be built for "Sheffield workers," but for "Sheffield poor," for those who cannot afford to live in cottages and ride to and fro from their work, when they have any, and who must therefore live, somehow, in the heart of the city. It is for these that the Sutton bequest is intended, so that they may live in decency and some measure of comfort. Hence the block dwelling must remain, and the Sutton Trustees are well advised to do what they can to enable the block dweller to live under better conditions than are at present open to him. This is a side of the housing question that must not be forgotten in the popular enthusiasm for the garden suburb.

A SKETCHING TOUR AROUND BRIGHTON

By DOUGLAS C. LEIGH.

NOTHING is more interesting than an attempt to discover a county's characteristics, and that charm entirely their own, which most of our English counties possess. An architect naturally notices architectural subjects first, and delights in endeavouring to find the origin of this or that feature which helps to give the buildings in the county in which they occur its individual charm.

There is no difficulty in recognising the peculiar beauties of Sussex, with its broad sweeps of downs, broken by slight mounds and hollows, where clumps of trees and shrubs, such as oaks, ashes and bushes of box, surround some old world church, farm or cottage.

Most of the village churches are of Norman origin, and like those of New and Old Shoreham have suffered comparatively little through the centuries, though of course containing portions of later work; the flinty stones (of which many are almost entirely built) being practically imperishable.

A distinctive church feature is the low hipped roof to the towers, covered with beautifully weathered red tiles which afford a striking and happy contrast to the yellowy green of the stonework. Rottingdean is one of the best examples of this.

The variety of materials available to the old builders for their house building is remarkable and they took every advantage of it. In Anne of Cleves' house at Lewes, so called because she lived here a short time, the lower portion is partly built of stone, partly of brick, with diaper work of flints and stone to the porch, whilst the upper portion is tiled, with half-timbered work in places. What the effect was originally of course can only be surmised, but now that time has weathered and toned down the whole of it, the effect is quite happy.

There is one feature in these old houses which is common to many, and serves common-sense and structural purposes as well as artistic, and that is the curved oak braces supporting the eaves of the roof between two slightly projecting gables. This recess afforded shade and shelter, and the long shadows thrown by the eaves in contrast with the sunlight on the gables is very effective.

Sussex possesses many beautiful towns and villages, but perhaps none more charming than Lewes and Steyning.

Lewes with its quaint, clean, bright streets, with their sudden descents, and its fine old castle, strikes one as being a typical English country town. The castle was built by William, Earl de Warrenne, son-in-law of William the Conqueror, and much of it together with its imposing entrance gateway, still in excellent preservation, can be seen.



COTTAGE AT OLD SHOREHAM, SUSSEX.—From a sketch by Mr. D. C. LEIGH.

Steving of course is smaller than Lewes, but for quaint picturesqueness the street containing the Grammar School can hardly be surpassed.

THE SOCIETY OF ARCHITECTS.

A MEETING of the Society of Architects was held on Thursday, April 6, at their premises in Bedford Square, Mr. Percy B. Tubbs, F.R.I.B.A. (vice-president), in the chair. After some preliminary business, Mr. Percy Macquoid read the following paper on—

The Evolution of Form in Silver Plate.

The subject of silver plate is such a very vast one that I propose to-day only to deal with the matter in connection with the growth and development of its form, excluding all that is strictly ecclesiastical, and limiting myself to the domestic plate of this country produced during Tudor times and onwards.

The possession of gold and silver plate has always been a mark of wealth and distinction. Highly important gifts between persons of distinction or to colleges and municipal guilds invariably comprised plate in some form; hence the spirit of emulation was aroused for the production of the most beautiful and ingenious variety of workmanship, and to fulfil these demands we find records in early times of a very high class of intellect devoting its artistic endeavours to this craft. To design fine plate, as indeed to design anything, it is necessary to be able to draw with skill and accuracy, so we find that in the fifteenth and sixteenth centuries many of the greatest painters abroad were designers of goldsmiths' work. Unfortunately, there were but few fine draughtsmen in this country, and this without doubt accounts for the fact that so much of our early English plate owes its origin in form to foreign sources, for we had to go to France, Italy, or Germany for designs in the Tudor, Gothic, and Renaissance times, and very frequently employed foreign workmen, so that the plate made here during these periods invariably reproduced foreign motives; but later on, as painting and architecture became individual to this country, we clearly see the development of fresh spontaneous impressions, and eventually the separation of foreign ideas, which is strongly marked by simplicity and solidity. It is useless to attempt to describe examples of English Gothic plate anterior to the middle of the fifteenth century, for with the exception of a few chalices and spoons no specimens remain that can be conscientiously assigned to this date, but there is no doubt from the pre-Reformation inventories, such as those of Winchester College, the City companies, and certain private individuals, that the amount of Gothic silver plate made in England must have been very great. In an inventory taken of the Winchester College plate in 1535, a large quantity of secular silver is enumerated, whilst the ecclesiastical plate given to the College Chapel by William of Wykeham and other donors amounted to nearly 4,000 ounces of silver and 92 ounces of gold, which was confiscated in the reign of Edward VI. The well-known King's Lynn Cup may or may not be English, but it essentially belongs

to a period of art before 1450, and although we may assume that we possessed a school of architecture at that time strongly tinctured with national taste, it is more easy to arrive at a conclusion on this point, for buildings survive the wear and tear of centuries, whereas the precious metals then being so valuable were constantly being melted down for the purpose of financing some war or personal raid for which ready money was required, in addition to the wish to create new and fashionable shapes to please the ever-varying taste of the rich men of those times, and so the examples of genuine Gothic domestic plate are now, alas! few and far between.

It is on the subject of the evolution of form from some of this existing plate that I propose to speak, and I think I can best explain my meaning by selecting as example those objects that are most familiar to us all. There have been three principal kinds of drinking vessels, exclusive of horns, to which we need not refer. The bowl, developing into the cup, the tanker or tankard, and the beaker. The earliest form of cup was a bowl of metal or wood, generally the latter, and in mediæval times called a mazer. They were generally formed out of the pollarded and, consequently, knotty portions of the maple or other trees, and owing to the hard quality of the wood were almost imperishable, and capable of a high degree of polish. In the fifteenth century, these wooden mazers were surrounded—originally, no doubt, to preserve their edges—by a band of silver gilt an inch or so deep, frequently ornamented with a motto, and for strength on the inside a small silver gilt disc, called a print, engraved and sometimes enamelled with a sacred emblem. A considerable number of these mazers are in existence, preserved chiefly in the museums and colleges. The drinking-cup belonging to Oriel College, Oxford, is of the second half of the fifteenth century, and is the earliest form of drinking cup for domestic use. The shape is Oriental, and it was probably brought over by the Crusaders. This must have been an extremely awkward vessel to handle, and it soon struck someone to improve matters by mounting the bowl on to a stem or foot, making it at once more decorative and convenient for use, as in the case of the well-known specimen in the possession of Caius College, Cambridge, called the Cup or Standing Mazer of "the three Kings." In the so-called "Anathema Cup" belonging to Pembroke College, Cambridge, which bears the very early hall-mark of 1481, the bowl and stem begin to blend together in a completed design, the bowl becoming bell-shaped and departing from the mazer form. This cup owes its name to the circumstance of the donor, Thomas Langton, a Bishop of Winchester, having had engraved on its base: "Qui Alienaverit, Anathema sit" (Whoever steals this, let him be accursed). Most effective words, as after 420 years the cup still remains in its original place. Twenty years later another development took place, the cup becoming straightsided, with a flattened base, but the feeling is still apparent of a bowl mounted on a truncated stem. This rare specimen, bearing the London hall-mark of 1500, and the Anathema Cup originally possessed a cover. These would have been fairly flat and tapering to a point on which a finial of steel-top shape, probably enamelled with the arms of the owner or sometimes a precious stone,

supposed to act as an antidote to poison, completed the design of the cup.

The extreme simplicity of the stems in the cups up to this period should be noted, for in another few years elaboration of design in this part of the cup commences. These decorated stems were first introduced from Italy. Lorenzo the Magnificent was an ardent collector of everything beautiful, and some of his most treasured possessions being antique Roman bowls, cut of solid agate, lapis lazuli, or crystal, some artists of the Renaissance conceived the notion of mounting these on stems with handles of gold or silver. The solid mass of the plain stone had to be relieved by a fanciful design in the metal, sometimes enamelled, and even this, to render it more fanciful, was often further ornamented with pearls, rubies, and other precious stones. The English and German goldsmiths were quick to appreciate the new idea, and having no Roman bowls we find them towards the end of the fifteenth century mounting ostriches' eggs, cocoanuts, nautilus shells, ivory, or anything else that came handy. The plain cocoanut cup belonging to Oriel College, Oxford, is of the end of the fifteenth century. Another specimen elaborately carved with scriptural subjects, and the mounting stem and cover richly worked in the style of the Renaissance, is dated 1576, and in a third and much later example an ostrich's egg is mounted to form the bowl, the lid being composed of the upper part of the egg, surmounted by a little figure. This cup is of the date 1623, but such a cup as this of so perishable a nature was probably more for ornament than for use. To adapt these same stems and forms to a metal bowl was a very natural step, as was reducing the cup to a flat tazza shape, still keeping the baluster stem. These were much the same in character as the raised dishes used for sweetmeats, and were a most graceful form of cup. The first is of the date 1570, the second about thirty years later, and the third 1625; this last is smaller in size and slenderer in proportion, and one clearly sees here the strong influence of the Venetian wine glass that was slowly coming into use, for by the end of the seventeenth century silver wine cups had ceased to be much in requisition, glasses and beakers having entirely superseded them. Tankards came into existence towards the middle of the sixteenth century. In all probability they were an outgrowth from the ewer and stone-ware jug. These plain stone-ware or salt-glaze jugs were first made in Germany, and like many other things than have come from that country since, were both cheap and ordinary. They were imported over here in large quantities for quite common use, but a fashion arose for mounting them with silver covers, bases and side straps of highly-finished workmanship. That the jugs themselves were considered worthless is evident from a remark in a letter from the Venetian Ambassador, resident at our court at the time, for he says: "The English have a curious habit of mounting quite common pottery with silver in the most elaborate manner, and these they are very proud of." The fashion for these mounted stone-ware jugs went on for upwards of fifty years, and they were highly esteemed. The convenience of a hinged cover attached to this form of drinking vessel must have struck the craftsman as a distinct scientific advance, and for the hot spiced drinks so much in vogue at that time, far more practical than a loose cover. This rounded form of tankard soon became in Elizabethan times straight-sided, slim, and graceful in shape, engraved or repoussé with fine strapwork intersected with mouldings, frequently having masks or other ornament added in chased work.

About the date 1640 all ornament is suddenly dropped, and the tankard becomes plain, still maintaining a narrow shape, but with a so-called petticoat shooting out at the bottom introduced, so that the person whilst drinking could grip the tankard with his left hand, the handle ending in a whistle for obvious reasons. This sudden cessation of ornament in plate, save for some light lines of engraving or a coat of arms, had been slowly coming into fashion since 1635, and owed its origin to the simplicity of life affected by the Puritanical faction, which culminated under Cromwell into the neglect of all that was beautiful. The tall tankard of 1640 well represents its period, and although of a shape made for ecclesiastical purposes as a flagon was also in domestic use.

A few years before the Restoration and after, the drum of the tankard becomes shorter and wider, as they are reduced in height and the petticoat disappears, but they remain plain except for some pseudo Chinese engraving, slight flat applied ornament, called by some card-cutting, or introduction of an acanthus border at the base. There are many



ROTTINGDEAN CHURCH.

large tankards decorated in a similar fashion belonging to the City companies.

In the eighteenth century the lid of the tankard became dome-shaped, and the sides curved. Beakers are best described as tumbler-shaped vessels. Originally in Gothic and early Tudor times they were mounted on either a plain base or on feet, in the form of dogs, lions, or human heads, and had covers of pyramidal shape, surmounted with some cognisance or object emblematical of the owner, or a precious stone that served as a talisman.

The word beaker is Scandinavian, and derived from the Greek bika, and probably imported into Northern Europe by the Varangian Guards, the shape of the vessel being suggested by the end of a horn, which was the recognised drinking vessel of the Dane and the Saxon. The beaker was never so popular here as in Germany.

A very beautiful example is a beaker belonging to Christ's College, Cambridge, and given by Margaret Beaufort, the mother of Henry VII. It is dated 1507, and is covered with most typical decoration of that period. The beaker is found throughout the sixteenth century with the sides generally ornamented with engraved strap-work, but at this time this particular form of drinking vessel was probably not used by the very rich, as its decoration and workmanship ceased to be so well considered or elaborated as in the contemporary wine cup. In Charles II.'s reign a smaller kind sprang into existence. These had slightly outcurved edges, and were plain except for bands of engraved repoussé ornament, and were used till the end of William and Mary's reign. They were evidently a cheap form of gift, corresponding, I presume, to the two-guinea wedding present of to-day, as they are almost always found with initial prick-mark letters of donor and recipient, together with the date. Small English beakers of this class are very rare now, for, being insignificant as decoration, they were melted down when superseded by glass. Some have survived by being given or left to the Church for use as Communion cups, and these have in many instances been parted with again as not suitable for the purpose.

The large Standing Cups, or hanaps, as they were called, were intended for decorative purposes, and were only used at ceremonial banquets, as is the case to-day. These embodied in their form and decoration all that I have already described as pertaining to the wine cup, and being on a so much larger scale the changes of form and ornamentation are easily traceable. The earliest known English hall-marked hanap is the Leigh Cup of quite the end of the fifteenth century. These important cups were made throughout the sixteenth as more or less English reproductions of a mixed German and Italian style, inspired by the school of Cellini, generally with a human figure on the lid or cover. The so-called Leigh Cup, in the possession of the Mercers' Company, dated with the London hall-mark of 1499, is a very



THE GRAMMAR SCHOOL, STEYNING, SUSSEX.—From a sketch by Mr. D. C. LEIGH.

characteristic Tudor-Gothic specimen, and the elaboration of detail in the workmanship is most remarkable. It stands about 16 inches high, while the cup belonging to Corpus Christi, Cambridge, is 21 inches high; this is dated 1570, and is in the richest style of the English Renaissance, with the strong foreign influence very evident. At the commencement of the following century the end of the stem where it joins the bowl is often opened out into three little ornamental brackets, and a perforated spire, again supported by three little brackets, added to the cover. These are generally spoken of as Steeple Cups, and bear the last example of Renaissance influence in English plate. The proportions of a Steeple Cup are comparatively poor to those previously referred to, and suggest that the silversmith, rapidly coming to an end of his resources, took refuge in building up unconnected form. Apparently the public of that time were also of that opinion, for towards the end of Charles I.'s reign the fashion for Standing Cups was in the semblance of a large plain tea-cup on a baluster stem devoid of decoration except for engraving, or sometimes just a granulated surface.

Probably at this time the dearth of anything new in design was caused by the small demand for more important pieces, all spare money being required for the King's Army or the opposing Parliamentary forces. Whilst many historical collections of old plate were melted down by loyal subjects for the King's cause, and every form of art languished, as is invariably the case under socialistic tendencies, with the reign of Charles II. all fresh design in the form of the Standing Cup died out, and when it re-appeared it was an evolution of the porringer.

Porringers and Caudle Cups are practically the same class of vessel. They were introduced midway through the seventeenth century for the possets and hot drinks that were so much indulged in then. The earliest are rather gourd-shaped, narrowing at the neck, and have a cover and dish, on which they were carried, and always have handles. The bowls and covers are ornamented with the form of decoration prevalent at the moment, and those of Charles II.'s reign are generally found bossed out with large fat flowers and fruit; later, again, with classical design in the form of acanthus or spiral gadrooning. This latter pattern goes on into the following century. The handles were originally ornamented with a recumbent female torso in the Renaissance taste. In fact, the bulbous form of the porringer does not lend itself to beautiful decoration, and it is evident that the artist having ceased to design, the silversmith had taken the fashioning entirely into his own hands, and was turning them out by scores. With the exception of pseudo Chinese engraving, all porringers seem to be decorated in a variation of one of these three grades of style. The evolution of form in their handles is most interesting to note. There is still some attempt at grace of modelling in the figures, but in the constant repetition by the craftsman without any fresh

design, these develop into lumps, then beads, and finally into two protuberances to rest the thumb on. Another curious detail like this is the whistle at the end of a tankard handle, originally in Jacobean times constructed as a real whistle with a view to ordering yet another drink. It deteriorated through reproduction, like the third eye of the antediluvian Saurian, till it became a useless cavity.

By the commencement of the eighteenth century the handles have become quite plain, and the porringer being no longer in requisition, the next evolution of design was to mount it on to a base, hence the beginning of the two-handled cup and the shape that for some mysterious reason has ever since been consecrated to the racing prize. The base gradually becoming taller and the bowl narrower, it developed in the reign of George III. into the well-known classical urn-shape bearing the strong "Adams" stamp. It will be evident how very vividly plate bears the imprint of form and decoration of the moment in which it was made, and that the decoration of plate reached its zenith in the middle of the sixteenth century, for there was a realism of thought at that time and a straightforward convincing power of strength conveyed by the masterly touch of artist and craftsman working in unison, that has never been surpassed. Its detail and design, too, had then reached to such an art that though concentrated down into a piece but a few inches high, it is so full of detail, so marvellous in proportion, that the same motives could be applied to an object twenty times its size and nothing be lost.

When the influence of Cellini and the goldsmith artists of that time began to wear itself out, plate commences its decadence, for the simple reason that the intellectual power is lacking. The Steeple Cup of James I., many of which were designed by George Herriot, the King's goldsmith, proves that the best goldsmith of that time was not comparable with those that had gone before, and in Stuart times, though there is much that is exceedingly beautiful, the lack of artistic feeling becomes still more evident, and the elements of quantity, not quality, begin to supplant all individual interest. A very favourite form of decoration at the time of the Restoration, and which kept in favour for thirty years, was large, shapeless, bossed-out flowers and fruit, amongst which, doubtless, in an ecstasy of newly-discovered loyalty, a fat lion and unicorn gambol, and one turns with relief to the severer taste introduced during the reign of William III. This, as well as the plate of Anne and George I., is dependent for beauty only on its proportions and mouldings. What greatly set off the proportions in the silver of this period was the extreme beauty of surface; this is caused first by the actual quality of the metal, which was of Britannia standard between 1696 and 1720, and by the numberless hammer-markings, which produced an irregularity on the plain surface, distributing the effect of light softly over the curves. In the plate of George II.

and III., the hammer marks are visible on the interior, but generally a polish was put on the outside by the workman before parting with the piece, and, in consequence, plate of that period much resembles the smooth manufactured efforts of to-day, on which the high brilliancy of the silver is concentrated into a diamond-like spot, by the combined efforts of butler and footman. In old plate the charm of surface is no doubt added to by the infinite amount of little points and imperceptible scratches consequent on wear, that reflect the light and give a curious whiteness to the metal; it is a minor detail, but it is also a minor attraction that the modern manufacturer cannot give. Many collectors prefer to keep their specimens with the surface oxidised and uncleaned, but I doubt whether in this way they do not lose much beauty of undulation of surface, especially in the instance of only slightly decorated articles.

Metal work is intended to look like the metal it is chosen to represent, and in all ages its exterior form has been considered with a view to brilliance. To obviate much cleaning in the highly-decorated pieces, these were generally gilt, but in early times you will find the plainer portions left in the silver, and this is called parcel-gilt. There is a praiseworthy attempt in these days to revive the hammered surface, but at present the effort to obtain the result is too apparent. The art of using a tool sufficiently large to give the infinite variety is no longer understood, and the results, therefore, are purely methodical and mechanical.

I now pass to the evolution of form in the very familiar and necessary objects, spoons and forks, the former of which indicate the varieties of change very clearly. No exact age can be assigned to the spoon, but the earliest records we have would seem to be Egyptian, about 2,000 B.C. The rudimentary idea of a spoon is supposed generally to have originated from a shell; indeed, its Latin name, *Coclearius*, more or less proves this conclusively to be the case. The first development must have been to mount the shell on to a handle of wood, bone, or metal, then the whole thing was roughly fashioned out of one of these materials, hence the complete spoon. It is interesting to note how the taste in the matter of shells reverted back, for in Renaissance times we find rare shells, rock crystal and agate, &c., being constantly used for bowls mounted to elaborate metal handles. The earlier the spoon the more the bowl approaches to the shape of a plover's egg, the pointed end being near the handle. In the Byzantine, Roman, and Gothic spoons the bowl is on a much lower level to the handle—let down, as it were, by a little step. By the fifteenth century, this step disappears, but the bowl still remains well below the handle, and continues to do so for many years. In Gothic times the handles were square-sided, and the tops terminated with some ornament: an acorn, a diamond-shaped knob, lions sejant, human heads or whole figures, such as the Apostles, and finally it became what is known as the seal top, which is simply the handle terminating in a flat base without any ornament, and this flat, plain surface being filled in with prick-mark initials. There is also a spoon called a slip-top, which originated in the middle of the sixteenth century from having (according to the ultra rigorous ideas of the then new Protestant religion), had the Apostle removed, together with the base on which it stood, leaving just the stem; others were then made to match these, and so a fashion was created that existed for a time. For about a hundred years from the middle of the sixteenth century the seal top form of spoon was more generally prevalent than any other. Isolated examples are even found as late as 1679, but these are rare. The original shape of the seal was hexagonal, and the necking or little moulding supporting it similar in character. Early in Elizabeth's reign this seal becomes rounder, and the plain necking develops into a little flattened ball, divided into sections something like a microscopic canteloupe melon. Towards the end of the century this ball is exchanged for a little vase of baluster-like shape, with low acanthus relief, the seal top still remaining round. This continues through the reign of James I., and then the ball under the seal is once more introduced on the top of a rather longer baluster. This chronological evolution is a very certain way of dating unmarked spoons, for the changes, though subtle, are easily perceptible to a close observer.

The heads of all these spoons, be they Apostles, lions, or seal tops, were invariably cast, and were dovetailed into the stem with a little tongue, the bowls and stems being always of hammered metal. These really vary very little, but as the spoon progresses through the sixteenth century the bowl becomes less like the oval of a plover's and more like the oval of a hen's egg, till finally it resembles the outline of a duck's egg. I can think of no better simile than this familiar



object, and most probably it was from the egg that all ovals originated their infinite variety. In lion top spoons the animal is sejant, and no doubt a representation of the British lion of the period. The figures of the Apostles are generally crude and stumpy, bearing a strong family resemblance to each other.

Isolated specimens bearing the child's patron saint were frequently presented as christening gifts. A complete set, however, of thirteen with what is called the master spoon, is extremely rare. That spoons of all kinds were thought a great deal of and were a much treasured form of plate is evident from the way they are mentioned in wills and other documents, even as far back as the thirteenth century. The form of the spoon obviously does not lend itself to much variety and treatment of decoration, and when every idea in the way of terminal finish had been exhausted a novelty from France, introduced by Charles II. with the Restoration, was welcomed. This marks a most sudden and distinct change in the whole form of the spoon; the bowl became a perfect oval, with the handle quite flat, the top of which broadened out, and was cleft with three divisions into a rude resemblance of a hind's foot, hence called "pied de biche," or sometimes "fish tail." The bowl of these Charles II. spoons is quite on a level with the stem, and is strengthened at its juncture by a pointed prolongation of the stem into the back of the bowl, termed a rat-tail. Originally this rat-tail was contrived merely for strength. There had existed abroad in earlier times a combined fork and spoon, in which the prongs of the fork folded over the back of a moveable bowl fitting into little sockets, and this, no doubt, suggested this addition.

Originally this tail was decorated, the rest of the spoon remaining plain, though a few specimens are found after 1776, with an engraved or die-stamped pattern on the back of the bowl and front of the handle. These flat spoons continued with variations into Anne's reign, and the clefts at the top of the handle being gradually omitted, and the bowl by degrees becoming deeper, it took the form we are accustomed to eat with to-day.

About 1710 the handle of the spoon was bent forward, and was more rounded, with a strong rib running down the face of it—this rib is a very characteristic feature for twenty years or more. Eventually the rat-tail becomes shorter and squarer, and finally degenerates into the hideous excrescence with meaningless little shoulders that we find on modern

spoons, and as the rat-tail disappears so the handle commences to curve backwards. I have refrained from touching upon what I will call fancy spoons, such as ladles, mulberry or tea spoons, &c., as they do not indicate the changes so clearly; but I would like to say just a few words about forks. These were originally two-pronged, and existed as early as the fourteenth century, mention of them being found in inventories of that time, but whether these were English or all imported from abroad it is impossible to decide. However, at that early period it is certain that they were not used in conjunction with the knife for meat, but merely for sweetmeats and fruit. In the earliest examples the prongs are of steel and the handles of silver, ivory, amber, enamel, or some such substance. The fork as an adjunct to the knife at table was first used in Italy, but came to us from France. There is a set of silver forks existing in Cornwall, belonging to Lord Mount Edgcumbe, dated 1667, which are the earliest set of English forks known. They are three-pronged and flat-handled, like spoons of the same period. Although three-pronged silver forks were at first most general, isolated examples of four prongs are also found of that same date, and occasionally instances of two prongs; these two-pronged silver forks may seem extremely inconvenient to our modern ideas, but it must be remembered that our ancestors ate their vegetables and small food from the back of their knives.

The fork followed precisely the same evolution as the spoon, the flat handle giving way to the round, with a smaller rib down the front. This rib in course of time disappeared, and the fourth prong, which had been omitted for over one hundred years, was re-introduced as a permanency, for the modern three-prong forks we so often see now are merely copies of those of the eighteenth century.

Of forks and their variety there is little to say. Fingers were made before forks, and played so important a part at a meal that we can quite understand the practical necessity of the rose-water dish. At the time when art interested herself most in plate, forks were virtually non-existent, and so but little care and thought have been expended on them.

I have this evening been able to touch most lightly on my subject, and for want of time have mentioned but a very few of the leading forms of plate, out of many hundreds of existing examples. I have endeavoured to select only the clearest types of their period without regard to any individual merit, so as to put before you some idea of the gradual growth of form and decoration. Isolated specimens and even a reverting back to a previous fashion in no way affect the onward movement.

This onward movement was also a downward one, for we have with us now more or less successful flying machines, such scientific concentration of food that you can almost feed an army on one pill, but the art of making beautiful silver plate with many of its sister arts has departed from among us, and we may well cherish as we do in museums, colleges, city companies, and private collections the few genuine specimens of English Gothic and Renaissance plate that have survived, for it is the plate of this period that has never been surpassed in either dignity, design, or decoration. Jacobean, Stuart, and Georgian plate, graceful and beautiful as it is, such as the work of the Vyners and Paul Lamerie, was only evolved out of what had gone before.

Mr. Percy B. Tubbs formally proposed the vote of thanks.

Mr. G. A. T. Middleton, in opening the discussion, said that he had felt considerably disappointed on learning that the subject of the paper was not to be "English Furniture," as announced, for, like most architects, he knew something about furniture. But his opinion was now somewhat changed, for he had come to the conclusion that he had learnt considerably more from the paper just read by Mr. Macquoid than if it had been on furniture. One thing which was particularly interesting about plate was the way in which the precise date of an object could be ascertained by means of the hall-marks. This was not possible in dealing with furniture. Consequently, the student of plate can get down to rock bottom at once, and know exactly where he stands. This renders the tracing of the evolution of ornament much more interesting and much more exact. It also helps the architectural student of the evolution of Renaissance ornament to see how it can be chronologically traced on Old English silver plate, and how it evolved. It was usual to assign general dates, but it would seem as if they would be able to be more precise in the future. He was curious to know whether the plate made during the Elizabethan period was not partly the work of Italians, of whom there were many in the country.

Mr. Freyberg said there was proved to be no cause for regret in the change of subject, but rather for congratulation.

The subject of the development of English decoration of whatever form always brought forward those two historical characters whom they, as architects, must dislike most—viz., Henry VIII. and Oliver Cromwell. With regard to the evolution of silver plate in this country, there seemed to him to be a distinct foreign influence visible in some of the silver work of the Renaissance period. No doubt many of Benvenuto Cellini's assistants came to this country and left their influence on works of art, which now afford us much enjoyment.

The vote of thanks was then carried with acclamation.

Mr. Percy Macquoid, in alluding to what had been said about foreign workmen, remarked that there was no doubt in his mind that some of the finest plate was produced by Huguenot refugees at the time when the strongest Elizabethan motifs were in existence. Probably the foreign influences came from France and Holland rather than from Italy. The first definite record of any foreign workmen being employed for any other art besides architecture occurred in connection with the erection of the building of marvellous Nonsuch Palace.

ILLUSTRATIONS.

CATHEDRAL SERIES.—ELY.

NORTH TRANSEPT, OCTAGON, AND PART OF NORTH SIDE OF NAVE.
WESTERN TOWERS AND SOUTH SIDE OF NAVE.

THE photographic views of Ely Cathedral originally issued in our Cathedral Series having been rather fewer in number than the importance of the church demanded, we now resume our illustrations from photographs by Mr. J. W. Borland.

ST. PETER'S CHURCH, LANCASTER.

THE work carried out from the designs of Mr. G. Gilbert Scott at St. Peter's, Lancaster, consists of the altar, reredos, hanging canopy, and steps and paving in the sanctuary. The altar is of white marble, and on the front is carved a representation of the Last Supper. The reredos takes the form of a large coloured and gilded triptych. In the wings are painted panels representing, on the Gospel side, the Saints mentioned in the canon of the Mass before the Elevation of the Host; and, on the Epistle side, those mentioned in the canon of the Mass after the Elevation. The main portion of the triptych is occupied by sculptured panels representing subjects embodying the idea of the Divine Sacrifice, the central panel at the top showing the descent from the Cross. Immediately below this is a richly canopied throne for the monstrance. The reredos is surmounted by a cresting symbolising the Crown of Thorns and a sculptured representation of the Crucifixion with an angel at each side at a lower level. The base on which the triptych stands is of black bird's-eye fossil marble. The hanging canopy over the altar and reredos is of an oblong shape, with a panelled soffite and a richly carved cresting round the top. The whole canopy is decorated with gold and colour, and it is suspended by chains from the roof. The sanctuary steps and paving are of black and white marble. The white marble throughout has been specially treated with the object of toning it down and giving it an ivory-like appearance.

NO. 180 NEW BOND STREET, LONDON.

THESE premises have been built on the site formerly occupied by a building erected about the end of the eighteenth century, and forming a portion of the estate of the late Mr. Davis, the famous art collector and dealer, of Bond Street. Mr. Davis's business is still carried on by his eldest son, Mr. C. Davis. The building was designed and planned so as to be suitable for commercial purposes, and consists of five floors and basement, and is fitted with an Otis electric lift. The front is in Portland stone, with certain insertions of Blue York. Messrs. William Cubitt & Sons, of Gray's Inn Road, were the contractors. The stone carving was carried out by Mr. John Hearn, of West Street, Pimlico, to the architect's models. The total cost of the building was about 7,000l. There were some very fine ceilings and woodwork in the old building. A portion of them was shown by Mr. C. Davis at the Franco-British Exhibition held in London two years ago. The new building has been erected from the designs and under the superintendence of Mr. Wm. Flockhart, F.R.I.B.A.

PUGIN STUDENTSHIP DRAWINGS.

WE this week reproduce some of the drawings submitted for the Pugin Studentship this year by Mr. J. Hill.

SKETCH OF CLEVELAND HOUSE
J. LEWIS



THE PAINT AND VARNISH SOCIETY.

A GENERAL meeting of the Society was held at St. Bride's Institute, London, E.C., on April 6, Mr. J. Cruickshank Smith occupying the chair. A paper entitled "The Decorator in Ancient Times," as printed in our last issue, was read by Mr. Noel Heaton.

DISCUSSION.

The Chairman said Mr. Heaton had given a delightful résumé of some of the most important and interesting facts connected with old-time decoration, transporting the mind back both geographically and historically to places and eras very far removed from the present. It was well known that Mr. Heaton had made a special study of the subject, and therefore spoke both as an expert and an enthusiast. The paper contained many interesting observations with regard to particular kinds of decoration, and explained very clearly the different condition both with regard to the material and to atmosphere which existed in the countries which he had described; and Mr. Heaton had distinctly shown that the quest for permanence was not a recent undertaking, but had existed as long ago as 4,000 years B.C. He had been a little surprised to learn that the question of the medium used in the old decorative methods could be disposed of so easily; that there was practically no medium at all, water, in conjunction with the binding property of the surface on which the pigment was placed, constituting the only medium necessary to obtain the results. If that was the generally accepted view, it showed that media must have been developed at a much later period than was ordinarily believed, and it would be interesting to know whether it was accepted by experts that no medium at all with the exception of water and the binding properties of plaster was used in those very early times. In looking at the analysis of the plaster and of the limestone he had been struck by the similarity between them. It was worthy of note that the particular limestone and plaster spoken of were by no means very pure carbonates of lime. Many of the limestones found at the present time contained a much larger proportion of calcium carbonate than 91 per cent., and it might be that the traces of iron, alumina, and magnesium might possibly have had some bearing upon the hardness and consequently the permanence of the surface produced. He was not certain, but he believed that Mr. Heaton said that lime was put on the prepared surface in the form of calcium oxide, and that the slow carbonising action changed that ultimately into calcium carbonate. It would be interesting to know by what process of reasoning that had been established, because it should be borne in mind that the plasters were subjected to an exceedingly small quantity of carbon dioxide. He should like to know

whether it had been definitely proved that sufficient carbonising could go on even during the lapse of centuries to turn the whole of a thick layer of calcium oxide into a carbonate form. In dealing with the pigments used on the walls, Mr. Heaton mentioned a blue which was a kind of frit, a yellow which was probably an ochre, and a red which was an iron oxide. He should like to know whether he came across any traces of black pigments or greens. From the standpoint of the artist he was as much interested in the paper as from the standpoint of paint technology, but he would leave that matter to be dealt with by those more qualified than himself. Mr. Heaton's concluding remarks on the decoration to be found in Roman remains were especially interesting. He recollected some time ago visiting a Roman camp at the village of Chesthouse in Northumberland, where there were some very interesting illustrations of crude decoration in a house which was understood to be a centurion's house. The walls were of rough rubble coated with plaster, on the top of which existed a well-preserved cartoon decoration.

Mr. Batten thought Mr. Heaton had given one of the most interesting accounts he had ever heard of fresco painting, laying stress on what was really the most remarkable aspect of it. In a great number of arts there had been ups and downs, but in the art of lime plastering, which was the necessary basis of all fresco work, there appeared to have been a steady deterioration for some four thousand to six thousand years, and he did not know whether the bottom had yet been reached. In an ordinary house it was seldom possible to find a wall left in a state fit to be looked at until it had been covered over with distemper or paper. That a plasterer should plaster an ordinary wall and leave it with so fine a coat that it required nothing further done to it was beyond his understanding of his task. In all times men looked back on earlier work. In the time of the Renaissance they looked back to the classic work of Rome, and marvelled at the manner in which ancient plaster work was done. In the time of Augustus, Vitruvius spoke with wonder of the ancient Grecian plaster work, which, he said, was done incomparably better than the work in his own period. The ancient Greeks might have looked back in envy on the early Minoan plasters, which still stood as examples of pure and beautiful work. So far as lime plaster was concerned, it seemed to be perfectly true that the old was better than the new. In the art of fresco painting plaster was an important thing, because if the plastering was not well done the painting was worthless. The art of fresco painting had never died out. There were times when little was done, but it had continued to the present day and was still being carried on. He did not think there was room for any doubt as to the

way in which the paint adhered to the plaster. The introduction of any medium would impair rather than help the permanency of the painting. The only enemy to fresco was the sulphur in the atmosphere of modern towns. He had been especially interested in Mr. Heaton's account of the cave that had been found in Crete, because in Dante there was a very extraordinary passage in which the seat of ancient Empire was set in Crete, and Dante spoke of a great cavern lying in Crete (which he described as a land altogether wasted). In the cavern the poet imagined a great image, representing temporal sovereignty, and from that image there flowed down tears which cut channels in the rock and made passages down to Hell. He wondered whether the superstitions that Mr. Heaton spoke of as attaching to that cave would fit in with the mediæval tradition preserved by Dante.

Mr. Matt. F. Garbutt, F.R.I.B.A., said he had read a good many papers on decoration, but never one from the point of view taken by Mr. Heaton that evening. Like most of the papers read before the Society, it was of a practical character and very useful. He remembered reading that the Romans prized their plaster for its own beauty of surface; they took a delight in a fine and hard plaster which they could polish by rubbing down. They were fond of the red pigment, which was found largely in Pompeii, because it was the colour they found best to set off the inherent beauty of the plaster. He should like to know whether Mr. Heaton had ever studied the cave paintings in India, and whether he could say in what medium they were executed. He was under the impression they were in tempera, and it appeared that the scale of colours described by Mr. Heaton was also similar to that of the Indian paintings. In some of the colours that had survived from antiquity he believed there was a blue which was thought to have been originally green, and it would be interesting to have some information upon that point. The Greeks seemed to have been expert in making very hard plaster, some of which survived on the surface of their work to-day. He was particularly interested to note that the Minoans carried the plaster over the steps of their buildings, as that was a proof of its extreme hardness, though he did not quite understand how such a hard plaster was obtained by the method mentioned. With regard to the simplicity of the tools of the modern plasterer, as a general rule it might be said the simpler the tools the better the workmanship. There was no man with simpler tools than the blacksmith, and no man who showed a greater amount of skill. The example of Egyptian plaster work inlaid in stone was absolutely new to him, and suggested a borrowing from the metal worker's methods. The undercut matrix for the insertion of the inlaid material was a method that had been used by the metal worker from the very earliest times, and if Tubal Cain did any inlaid work he probably undercut the ground in the same way.

Mr. Bussell also complimented Mr. Heaton on his interesting and valuable paper, and hoped it would be only one of a series delivered to the Society. The many interesting details gave rise to a host of thoughts, but he would only touch on three points upon which he wished to have information, the first having relation to the brush marks found upon one of the paintings. Logically, brush marks denoted brushes, and it would be interesting to know what the brushes were made of. In Knossos Mr. Heaton said the plaster work had been greatly damaged by fire, but he thought there must have been other things as well, because at the present time the London County Council recommended plaster to protect wooden partitions from fire. The third thing that had struck him was that plaster had won the love of people in all ages. Many people considered plaster work to be deadly monotonous and other than artistic, and he had been wondering what had led to so consistent an appreciation of the work; whether it was the smoothness of surface or the fact that it kept out draughts. He also wished to know whether the decorative schemes of ancient times embraced the use of woodwork.

Mr. Noel Heaton, in replying to the discussion, thought Mr. Batten had replied to the remark of the Chairman with regard to medium. It was a matter of common knowledge that no medium was used in the case of fresco painting, and he was quite certain that what he had described was fresco painting, as the result of careful experimental investigation. Previously, it was supposed that the practice of fresco painting was not introduced until the time of the Romans; in fact, when he (Mr. Heaton) published the results of his experiments, several people wrote to him to know if he was quite sure of his facts. He did not know if his views were generally accepted, but until it could be shown that

there was any flaw in his reasoning he was prepared to maintain them against anybody. With regard to the composition of the plaster, it was true it was not as pure as a chalk limestone, which contained 95 to 96 per cent. of carbonate of lime, but the proportion of alumina and silica was not sufficient, he thought, to give it any hydraulic properties. It was conceivable they used a part of their lime burned, mixed with another part of limestone unburned; in this case the analyses would be identical, and both substances would be amorphous, and it was difficult to obtain any evidence. He had made numerous experiments in the endeavour to decide this point one way or the other, but up to the present had only negative evidence to offer; that is to say, that by no method of investigation had he succeeded in distinguishing one part of the plaster from another. With regard to the hardness, a very interesting point cropped up. In an earlier period the plaster was very much coarser and not so white, and there was a very considerable proportion of aluminium silicate, not clay, but something in the way of a zeolite, which decomposed in hydrochloric acid; and it struck him that possibly this may have had some function in hardening the plaster. The matter, however, required further investigation. With regard to the question of carbonation, fresco painting was carried on at the present day in exactly the same way, the setting of the plaster fixing the pigment. The carbonation of the surface commenced immediately the painting was exposed to the air, but it was true that the conversion of the entire mass of hydrate into carbonate was a very long process, and in the thickest portions of the plaster one could find light traces, after three thousand years, of hydrate of lime. With regard to pigments, he had found no green in the Roman work, the blue being mixed with yellow to obtain green. In the Roman period, however, they used a green and several additional pigments, such as madder and red lead. In the Roman villa at Knossos he had referred to there was a green which was very freely used, a sort of terre verte. With regard to the steady decline in the art of plastering and the technique of it, it was to be hoped that investigations such as he had described might be useful in drawing attention to what had been done in the past, and possibly help to recover some of the ancient traditions. Some people dismissed such archaeological work as being of no practical utility, but the great thing to show the bearing of the information gleaned or obtained was the improvement of modern practice. The great trouble in connection with fresco painting was the effect of sulphur in the shape of sulphuric acid arising from the combustion of coal, and that of course was a trouble that was not so much in evidence in ancient times. Sulphuric acid condensing on the surface of the plaster re-acted with the carbonate of lime and formed sulphate of lime, which, in its fully hydrated state, had no setting power, and was extremely soluble in water. Undoubtedly the ancient plaster was used in the first instance as a means of protecting the building stone from decay. The Minoans used a local stone which was a crystalline gypsum, and it was for that reason the Venetians had to build an aqueduct to bring the water to Candia from the mountains, the local water being undrinkable from its having flowed through the strata of gypsum and become contaminated with sulphate of lime. Where the excavations had been uncovered for years, and the stone was not protected by plaster, the stone melted away like sugar, and he had photographs showing square blocks that had been greatly damaged in as short a time as three years. With regard to the cave and Dante's poetry, the cave described in the paper was by no means the only one or the most important one on the island. In the Minoan times the natural caves were considered as holy places, and offerings were deposited there, and excavations of a cave in Mount Dicte had revealed a number of such cultus objects. He himself had penetrated into a cave on the other side of the island for hundreds of yards, and at the extreme end had discovered pieces of pottery which showed that the cave had been used in ancient times. It was perfectly true that the Romans were fond of plaster-work, and subjected it to a polishing operation before the plaster was set. They made it into a beautiful hard and polished surface, and he had discovered pieces polished in that way on the site of the Roman villa at Knossos. He thought it was a practical suggestion to put forward that red was extensively used because it took a polish well, but the same thing was to be found in the Minoan work, where a red background was almost invariably employed in the important rooms and those apparently used for ceremonial purposes. Probably it was a tradition derived from very early times which came to have some symbolical meaning.

Mr. Bradford here pointed out that even to-day the natives of Africa used a red, known in this country as Kaffir



THOMAS A BECKET'S PALACE, TARRING.
From a sketch by Mr. D. C. LEIGH.

red, with which they smeared their blankets before wrapping them round their bodies.

Mr. Heaton thought the tradition of the use of red went back to pre-historic times. Red would be the first and easiest pigment obtainable except yellow ochre, being obtained by grinding hematite or burning yellow ochre. He found the yellow stood quite as well as the red. He exhibited a fragment from Knossos, which had been turned up in the excavations, and inadvertently left exposed to heavy rains in winter and hot suns in summer for ten years, and the colour had not changed in the least. As regards the cave paintings of India, he was not in a position to say anything as regards their execution at present, but Mrs. Herringham, who was at present in India making reproductions of these paintings, had promised to procure specimens for him to examine. It seemed to him that there was considerable similarity between these and the remarkable distemper paintings discovered by Dr. Stein in Central Asia. He had no knowledge of the inlaid decoration of the chapel of Nefermaat in Egypt being derived from metalwork traditions, but it must be remembered that that was very early in date. It was quite unique, and no other specimen existed, and it was a most charming piece of work. As to brushes, no specimens of tools had been found, but it was quite certain that the work was done with brushes. He had seen several specimens of Egyptian brushes, which were generally made by doubling a bunch of fibres and binding them with string. With regard to damage by fire, Mr. Bussell would remember that a fierce fire would destroy the surface of the plaster by re-converting it into lime. It was certain that Kumar was destroyed by a conflagration which destroyed the greater part of the paintings, and the strong smoke obliterated the decorations, and there were few fragments which were not damaged either by smoke or calcination. Woodwork was used, and it was possible to trace where it existed. Very often there was a timber frame construction filled in with rubble, the weight being taken evidently by the timbers. He had in his possession some rather interesting photographs showing the holes where the timber could be distinctly seen. It was a debated point as to whether the plaster work was carried over the timber.

A hearty vote of thanks having been accorded to the author for his paper, the meeting concluded.

THE NATIONAL GALLERY.

THE annual report for 1910 of the Director of the National Gallery is rendered notable by the fact that it records the bequest of nearly two hundred pictures from the collection of Mr. George Salting. These cover a wide period, ranging from Benvenuto da Siena (1436-1518) to Jean François Millet (1814-1875). Under the terms of the will of Mr. George Salting, the Gallery not only came into possession of the 28 pictures which Mr. Salting had lent to the Trustees, but the Board had the right of selecting from his collection any paintings which they might deem worthy of a place in the Gallery, and 164 pictures were ultimately so selected and are described in detail in the report. Some ambiguity appeared to exist as to the custody of the finished water-colours and the miniature portraits, both of which might be considered as pictures. The National Gallery Board did not

desire to press any claim to the water-colour drawings, but expressed a wish for the custody of the miniatures. A decision on this point was, by the consent of all the parties interested, left to the law officers of the Crown, who have decided that on the true construction of the will the collection of miniatures passed to the keeping of the Victoria and Albert Museum, South Kensington, and was not liable to be selected for the National Gallery.

The purchases for 1910 were "The Poringland Oak" (2,700*l.*), by John Crome; "Dr. Hoadley, Bishop of Winchester" (2,000*l.*), by William Hogarth; "A Family Group" (1,000*l.*), ascribed to Jan Vermeer; and a "Landscape," by W. Buitenweg.

Amongst the gifts were "Portrait of a Gentleman," by G. F. Watts, R.A.; "Portrait drawing of M. Rodin," by W. Rothenstein (given by Mr. G. Bernard Shaw, through the National Art Collections Fund); "Our Lady of Good Children," by Ford Madox Brown; "Monna Pomona," by D. G. Rossetti; "Oberon, Titania, and Puck," by William Blake; "Refreshment" and "Study for Marlow Ferry," by Fred Walker; "Study for the Pied Piper of Hamelin" and "Strolling Players," by G. J. Pinwell; "Panthers resting," by J. M. Swan, R.A. (given by the National Art Collections Fund); "Mother and Child" and "The Drawbridge," by Jacob Maris; "Watering Horses," by Anton Mauve; "Interior of Haarlem Church," by J. Bosboom; "The Philosopher," by Josef Israels; "Grandfather's Birthday" and "Fish Market, Dieppe," by Eugene Isabey; "Le Pont Marie," by S. Lepine; "A Castle by a Lake," by B. Wilson; the following six pictures by T. Gainsborough—"A Ruined Churchyard," "A Road by a Rock," "Cattle and Tree," "Derwentwater," "A Cottage in a Wood," and "A Woodland Glade"; "Christ Blessing," by Benedetto Diana; "Pencil study of an Olive Branch," by John Ruskin; "Portrait of J. M. W. Turner, R.A.," by J. T. Smith; Palette used by J. M. W. Turner, R.A., "Portrait of Sir Joseph Duveen," by Emil Fuchs; "The Shipwrecked Mariner," by Josef Israels; "Portrait drawing of a Dead Boy," by Alfred Stevens; and twenty architectural subjects by Edward Lear (who exhibited during the third quarter of last century).

The Trustees acknowledge the receipt of 4,250*l.* from the Committee of the National Loan Exhibition of 1909 as a payment on account of the profits of that exhibition, such sum to be expended in the purchase of pictures for the National Gallery.

Two works of art were purchased last year under the terms of the Chantrey Bequest—a large canvas by Arnesby Brown, A.R.A., entitled "Silver Morning," and a bronze equestrian figure of "Sigurd," by Gilbert Bayes. The latter has been placed in the Gallery of British Art; the former is on loan at the Royal Society of Artists, Birmingham.

The precise number of works added to the different schools in the two Galleries during 1910 was as follows:—Italian Schools (49), Dutch School (71), Flemish School (15), Spanish School (2), German School (3), French School (34), and British School (86).

The Turner Gallery annexed to the National Gallery of British Art, Millbank, presented by the late Sir Joseph Duveen and completed by Mr. Joseph Duveen, has received the Turner Bequest pictures and was opened to the public on July 20. Nineteen characteristic examples have been retained at Trafalgar Square to represent the painter in the history of European art, including the two pictures which, in accordance with a special clause in Turner's will, are placed in juxtaposition to two pictures by Claude Lorrain. A certain number of Turner's water-colour drawings have also been retained at Trafalgar Square. The extension of the Gallery at Trafalgar Square so long urgently needed is now complete, but the fireproofing of the older parts of the building is not yet finished, although it is hoped that the eastern wing section, which was the first begun, will be completed shortly.

The Gallery in Trafalgar Square was visited by 630,882 persons on the free days during the year, showing a daily average attendance on such days (207 in number) of 3,047. In addition to the above number, 69,012 persons visited the Gallery on Sunday afternoons throughout the whole year, showing a daily average attendance of 1,380. On students' days (Thursdays and Fridays) 58,974 persons were admitted between January 1 and December 31, 1910; the admission fees (at 6*d.* each) amounting to 1,474*l.* 7*s.*, as compared with 1,584*l.* 15*s.* 6*d.* received in 1909.

The National Gallery, British Art, at Millbank, has been visited by 276,149 persons on the free days during the year, showing a daily average attendance on such days (206 in number) of 1,340. In addition to the above number, 65,859 persons visited the Gallery on Sunday afternoons throughout the



whole year, showing a daily average attendance of 1,317. On students' days (Tuesdays and Wednesdays) 44,506 persons were admitted between January 1 and December 31, 1910; the admission fees (at 6d. each) amounting to 1,112l. 13s., as compared with 911l. 11s. 6d. received in 1909.

The amount annually realised by admission fees at both establishments is devoted as an "Appropriation in Aid" of the Parliamentary Vote to the National Gallery.

The total number of students' attendances in the Gallery in Trafalgar Square on Thursdays and Fridays throughout the year was 15,796. Independently of partial studies, 739 oil-colour copies of pictures have been made, viz., 422 from the works of 99 old masters and 317 from the works of 21 modern painters. One hundred and forty-five new students have been entered on the books during the year.

The total number of students' attendances at the Gallery of British Art on Tuesdays and Wednesdays throughout the year was 6,415; and 298 completed copies of the pictures have been made in oil-colours, 110 in water-colours, and 11 in pastel. Eighty-eight new students have been entered on the books.

UNIVERSITY OF LONDON LECTURES ON ARCHITECTURE.

LATER Byzantine architecture was dealt with by Mr. Banister Fletcher in his lecture, the last of the session, at the British Museum on Tuesday, March 21.

The style, he said, had altered but little since the days of Justinian, showing that the Greek Church had not changed. The principal examples are to be found at Constantinople; others there are in S. Mark's, Venice; S. Fosca, Torcello, churches in Greece, Macedonia, Armenia, and Russia. The style even crept into France, brought by the traders with the East through Venice.

S. Irene at Constantinople is situated in the first or outer court of the palace of the Sultan, and is one of the oldest and best preserved of the Byzantine churches. It occupies the site of an earlier church erected by Constantine and several times rebuilt. In 740 A.D. it was destroyed by earthquake, and re-erected after that as we now see it. It has retained its original basilican plan, with nave and two aisles, approached by an atrium and narthex in two storeys, but has the eastern treatment in the apse. The nave is in two divisions: the first western division is a rectangle covered by an oval flat dome; the second eastern division is a square covered with a dome forty-three feet in diameter. It is thought to be the earliest example of a dome raised on a high drum with windows in it admitting light to the interior. The semi-circular apse, in which the seats for the presbyters are still to be seen, is covered by a semi-dome. The walls externally are in courses of brick and stone, a favourite treatment in the Byzantine style. The church, which is close to S. Sophia, is now used as an armoury by the Turkish Government.

The church of S. Theodore, also known as the Theotokos Church, dates from the twelfth century. The western front, which consists of the outer narthex, is one of the most elaborate in Constantinople, and is built of brick and stone in bands. An arcade of columns supports semi-circular

arches, above which are large semi-circular arches in recessed rings pierced with windows. The domes are on octagonal drums with semi-circular arched openings, many of which have been filled up in order to keep out the eastern sun. The plan is small but beautifully arranged, having an outer narthex with three domes on high drums, an inner narthex with one flat dome, and a central dome measuring only thirteen feet across on a high drum. The apse is semi-circular internally and polygonal externally. The domes externally present a melon-shaped treatment which was frequently used in Constantinople.

The church which was formerly attached to the monastery of the Chora was rebuilt in the eleventh and twelfth centuries. It has an outer and an inner narthex; the interior is beautifully decorated with mosaics, and the building is known as the Mosaic Mosque. The inner narthex has two domes on high drums, and the square nave is covered with a dome also on a high drum measuring eighteen feet in diameter. The whole of the walls, vaults, and ceilings are entirely covered with mosaic. The outer circle was added in after years. The inner narthex is covered with a melon-shaped dome. A Saracenic minaret was added in later years when the church was turned into a mosque.

The original basilican church of S. Mark's, Venice, built in the year 830, resembled that at Torcello, and was constructed to receive the body of S. Mark, the evangelist, from Alexandria. This church was partially burnt in 976 A.D., and reconstructed as we now find it between the years 1043 and 1071. It resembles the church of the Holy Apostles at Constantinople, which was destroyed by one of the Sultans. The interior was altered from the basilican to the Byzantine plan, a Greek cross with domes. In the twelfth century the marble facing and the columns to the façade were added, and before this the mosaic to the domes. The timber domes were added in the thirteenth century, and further Gothic alterations took place in the fifteenth century. Columns were brought from Rome and from all parts of the East, from Constantinople, Greece, Arabia, and Persia, and early Christian buildings in Asia Minor and Syria were despoiled for this purpose. The church is a Greek cross on plan, having a narthex along the three sides of the western arm, a nave covered by a dome at the crossing forty feet in diameter, and domes over the two arms. The aisles are twenty feet wide, and pass through the piers which support the dome. These piers measure twenty-eight feet by twenty-one feet. The narthex is divided into square bays having pointed arches and covered by low domes ornamented with mosaic. Each side of the central entrance the arch springs from two pairs of columns, with small Ionic capitals crowned by deep dossier blocks. The broad transverse arch is left plain to be treated with mosaic. The mosaics of the domes of the narthex date from the fourteenth century, and represent the Creation.

The nave, which is forty feet wide, has high columns, probably taken from old basilican churches. These support stilted semi-circular arches, over which are bridges three feet wide which run round the whole church and lead to the women's gallery. Galleries, however, are not so usual in the Western Church as in the East.

The wide spaces of uninterrupted walling are covered with glass mosaic. No mouldings are used in order not to interfere with the treatment of the mosaic, the angles of which are rounded off. The uneven surface of the pavement is due probably to shifting foundations, though it has been suggested that the undulation is intentional, the idea being to represent the waves of the sea.

The cancelli of marble panels were erected in 1393. These support a screen of columns and a crucifix with statues of the Holy Virgin and S. Mark on either side; a small arcade encloses the lower part leading to the crypt belonging to the old church, which is below the sea level, and was formerly under water. The body of S. Mark was placed here originally, but is now enshrined in the upper church. Many of the capitals are convex in shape and the carving undercut, and beneath the surface of the outline the leaves are V-shaped, and the deep drilling between the lobes shows the Greek craftsmanship of the Byzantine style so strongly in contrast with Roman work.

The central dome is of solid brickwork covered with timber. These timber domes are of unusual shape and are covered with lead; they have no prototypes in the Byzantine style. The walls externally are of brick, which is still visible on the north and side façades.

Doge Domenico Selvo in the twelfth century instructed all Venetians, ambassadors, officers of the army, navy, captains of the trading ships, &c., to assist in obtaining all

THE CASTLE GATEWAY, LEWES



the material possible for the façade of the church. In consequence Venetian colonies, especially Constantinople, were unsacked, and an enormous number of columns were produced, thus accounting for the quantity used and for their being crowded one above the other. They were of all shapes and descriptions, polygonal, square, fluted, unfluted, and of every kind of marble. Old Corinthian capitals from Roman buildings were used and placed next to the convex Byzantine capital in many instances.

The façade presents a series of five arched openings, the central opening being semi-circular and admitting light to the nave. The original bronze doors of the central doorway are still in existence; the arch is 30 feet in diameter, the outer carving measuring 3 feet 6 inches. The windows in the façade are small and grouped together; they are filled with lattice-work of translucent marble and coloured glass. The square billet moulding is used and is to be found in all periods of Venetian art.

The font in the baptistery dates from 1545; it is beautiful in design and proportion; the lid is crowned with a figure of St. John the Baptist. The four bronze horses on the façade are the only existing specimens of a Roman quadriga; they date from the time of Nero and originally belonged to the quadriga which crowned his arch, and later that of Trajan. Constantine sent them to Constantinople when he removed his capital. In 1204 Doge Dandolo brought them to Venice. They were taken to Paris by Napoleon in 1797 to crown the Arc de Triomphe, and in 1815 they were placed in their present position by the Emperor Francis.

YORK MINSTER.

In 1898 the Dean of York issued a special appeal for funds for the preservation of York Minster. After an expenditure of more than 50,000*l.* the work is almost complete. From time to time there has been issued to subscribers a report on the restoration work. The twelfth of these "Occasional Papers" by the Dean has now appeared. In the course of it he says:—

"The stone and glass of the nave clerestory windows have now been put into a condition of thorough repair. The subjects on the latter are entirely heraldic shields, and in order that they may be duly appreciated it is well to remember the purpose and significance. Mediæval heraldry

was no matter of mere caprice or ornament. Armorial bearings could only be assumed or displayed by the distinct authority of the Heralds' College, and as such they express the family and name of those to whom they had been granted, or of their legitimate descendants, and thus the preservation thereof in the nave of the Minster indicates that members of certain families were here at the building, or had contributed towards the expense thereof, but as there are no marks of cadency on the several coats it is impossible to say what members of the families are personally represented thereby. I can therefore only mention the names of those recorded as living during the period of the building of the nave, and likely to have been present here, and give short historical memoirs of them, but while indicating this it is impossible to guarantee the individual personality of any of them. Nevertheless, these shields enable us to idealise what manner of men supported the three Plantagenet kings in their attempt to subjugate the people and land of Scotland, and, however we may disapprove of the object which they had in view, we cannot but recognise the motives which animated them, their loyalty to the Crown, their courage in the face of a powerful enemy, their self-sacrifice in leaving the enjoyment of wealth and home at the call of duty, and their patience in bearing hardships and suffering even to death itself. We need such qualities still for the more reasonable and peaceable dealing with the circumstances of the day in which we live, and herein is an encouragement to those who have eyes to see and ears to hear, for though there is neither speech nor language, yet their voices may be heard amongst us, and their bright example should stimulate us to follow their good example, and do our duty in that state of life unto which it has pleased God to call us.

"The repairs to the stone and glass of the east window of the south choir aisle is another work which has been accomplished. The former had deteriorated so as to be scarcely equal to support the latter against the violent gusts of the east wind, and the glass itself had become so encrusted with soot and dirt as to lose in a great measure its brightness and beauty. It is difficult to say how much of the painted glass in this window includes portions of the original window, but there is evidently much which has been inserted from other windows, though all, save the fragments of a modern coat-of-arms at the top, is mediæval. And the golden eagle, one of the supporters of the Scrope family, together with the tuft of white feathers, their badge, and the golden lion sejant, their crest, which may be noticed here, seem to indicate that it was probably erected by Thomas le Scrope, of Masham, 1459, who established a chantry here for himself and the members of his house.

"There are still many windows requiring careful attention, and our purpose is to carry on the good work as rapidly as the means at our disposal will allow, so as to preserve as far as possible the unrivalled wealth of exquisite mediæval painted glass with which our Minster is enriched.

"The condition of the Choir Fund is now causing us some little anxiety. It seems only right that the music of the services in such a building as York Minster should be in harmony with the dignity and beauty of the building, and we should therefore very much regret if we are compelled to reduce the members of our choir. During the last two years the annual amount received has depreciated by nearly 200*l.* During my tenure of office the necessary funds for the fabric and services of the Minster have been munificently augmented by substantial personal donations, and also by the active efforts of those who have in various ways endeavoured to enlist the liberality of others therein. . . . The munificent bequests of the three Miss Duncombes, who had a life-long devotion to the Minster, are materially assisting us to carry on the many details in the needful work of restoration, which is still incomplete. But the Choir Fund languishes, and while so many participate from time to time in the services of their Cathedral Church, I feel confident that they will not leave them to be solely maintained by the residents in the Cathedral City.

"Suggestions have been made to me that a memorial statue to the late King Edward VII. should be placed in the Minster, but I have purposely refrained from taking any action therein lest I should seem to be forestalling those who had a stronger claim to take the initiative. The year of mourning is, however, now fast passing away, and if anything is to be done it should be done at once. After due consultation, therefore, I venture to say that if the necessary funds can be subscribed—100*l.* to 120*l.*—a statue of the late King shall be placed on the bracket at the south-east end of the choir, immediately opposite the statue of King Edwin. It would be an appropriate position. For they were both

MODERN EUROPEAN ARCHITECTURE.
GERMANY.



STREET FRONT OF HOUSE AT DAHLEM-GRÜNEWALD, BERLIN.—Herren PAULUS & LILLOE, Architects. [From *Berliner Architekturwelt*.]

"peacemakers," though necessarily differing in their action according to the times in which they lived. King Edwin endeavoured to secure the peace of faithful Christian people of his kingdom by defending them with his life from the aggressive violence of the heathen Penda, King of Mercia. King Edward sought to promote peace amongst the nationalities at home and abroad by active and incessant efforts of mutual conciliation, which by God's blessing maintained harmony and good feeling amongst the nations of Europe."

Mr. R. C. Green, clerk of works at the Minster, reports to the Dean as follows, under date February 13, 1911:—

"Since the issue of your last occasional report the nave clerestory windows have been under repair. On the south side five windows were taken in hand; the lead work of these windows was in a very bad state, and much of the glass broken. The whole of the glass was carefully removed to the stone yard, where in one of the sheds, specially arranged for this purpose, it was carefully repaired by glaziers accustomed to this particular work and under my inspection. None of the glass was removed from the premises, no attempt being made at restoration, plain glass being put in where glass was missing. Where the glass was simply cracked strengthening leads were added, but in some cases it was found necessary to re-lead whole panels. The mullions to these windows were in a very bad state. Owing to the corrosion of the very large saddle-bars the mullions in many instances were split from sill to springing. In addition to this, they were considerably decayed and unsafe, considering the amount of heavy tracery which they had to support. The stone work in the tracery was also in a bad state and had to be partially renewed. Great care was taken with the old stone, and every piece possible was saved. All the old saddle-bars were re-used, but shortened, and copper ends were attached to them, as so much damage had been done by the iron bars being let into the stone. After the completion of the five windows on the south side, six windows were taken in hand on the north clerestory. The glass in these windows was in a similar condition to that on the south, but the stone work was not in such a bad condition; the mullions of the windows were, practically speaking,

renewed, but it was not necessary to remove the whole of the tracery as had been the case with regard to the south side windows.

"The south side windows were taken in hand in May 1908, and finished in November 1909. The windows on the north side were commenced in July 1909, and finished in September 1910. The total sum expended on the eleven windows amounted to 2,593*l.* 7*s.* 1½*d.*; this works out at about 235*l.* 15*s.* 2*d.* per window.

"In September 1910 the east window of the south choir aisle was taken in hand and treated in a similar way to those in the clerestory. The stone work generally was found to be fairly sound, but the glazing was in a very bad state, and in need of urgent repair. This window was completed on December 30, at a cost of 201*l.* 12*s.*"

GUILD OF ARCHITECTS' ASSISTANTS.

At a meeting held at Prince Henry's Rooms, Fleet Street, on April 10, Mr. T. H. B. Scott took the chair. The Hon. Secretary reported that two further suggestions of the Guild to the Registration Bill Committees of the R.I.B.A. and the Society of Architects had been duly acknowledged by those bodies. They were as follows:—A clause to legalise a scale of salaries for assistants, subject to approval of qualification by the Registration or other agreed authority. That the general provisions of the Bill should offer greater security to the pupil by surveillance of his progress, on request, and ease of appeal to the Registration or other agreed authority, by his parents or guardians when necessity demands. Also, that the present position of the assistant in relation to open competitions be retained. These, combined with the two previous proposals of the Guild—(1) registered practitioners to employ only registered men as assistants; (2) restriction of the number of pupils and unpaid assistants in the office of a registered practitioner—represented the first concerted attempt to put forward the claims of the assistant to the two premier architectural societies.

MODERN EUROPEAN ARCHITECTURE.

GERMANY.

[From *Berliner Architekturwelt*.]

GARDEN FRONT OF HOUSE AT DAHLEM-GRUNEWALD, BERLIN.—Herren PAULUS & LILLOE, Architects.

It was agreed to open a special fund to bring the proposals of the Guild to the notice of assistants generally, and circular letters to all sympathisers were being drawn up to that effect. The Hon. Secretary then dealt with the present position of the Guild and the various objections which had been raised against it. He pointed out that every object of the Guild had its corresponding item in current architectural politics. The trade union objection to the Guild had an equal bearing on the policy of the R.I.B.A. and the Society of Architects. He thought that objection merely a matter of prejudice rather than reasoned analysis, and that the slightest actual acquaintance with the trade-union movement would suffice to show the absurdity of it. A letter he had addressed to the *R.I.B.A. Journal* of April 1 on this subject was then read. That letter dealt conclusively with the current objections to trade unionism, and, at the same time, indicated some measures of a trade-union character which were being adopted by the profession and others which could be adopted with equal success. In reference to the registration proposals of the Guild, the first two had been said to unduly interfere with the liberty of both the assistant and the principal; but this undue interference was believed by the Guild to be necessary for the future welfare of the profession. A well-known member of the R.I.B.A. Council had confessed to having spent 25 years as an assistant, and every member of the profession had to spend a shorter or longer period as such, and many, an increasing number, never attained the position of principal. This being so, it appeared only reasonable that the framers of a Registration Bill should pay some attention to the probationary period passed as a commonplace grub, as well as that of the imago and final stage of professional success, to which the general principles of the proposed Bill were exclusively directed. The first proposal of the Guild—"That registered practitioners should employ only registered assistants"—was put forward with the object of preventing a state of affairs which had arisen in the legal profession, namely, that of creating a crowd of un-

registered assistants, that is, unarticled students not training to acquire the registration qualification, who would come into keen competition with the articled student, and necessarily reduce his market value. The influx of students to the towns, and especially to London, for the purpose of study and examination would aggravate this result. The second proposal, that the number of pupils and unpaid assistants in a registered practitioner's office should be restricted was prompted by the same object. It was clear that a practitioner with a certain amount of work in his office could only superintend the studies and experience of a certain number of pupils, and if that number was exceeded it would be to the detriment of the pupil. The latter proposal of the Guild, relating to the pupil, would automatically fix the number of pupils satisfactorily manageable in an office. The unpaid assistant was to be apologised for by inexperience and the necessity of extending the period of early study as improver, but after that time he was in serious competition with the assistant who depended upon his salary largely, if not entirely, to exist, thus becoming a serious stumbling-block. The Guild holds it to be criminal on the part of the principal and the unpaid assistant to continue their relationship when it is evidently detrimental to the mass of assistants. Again, the third proposal of the Guild, to legalise a scale of salaries for assistants would, if adopted without the two first or their equivalent, become quite artificial and independent of the current market value of the assistant.

A discussion followed, in which Mr. J. V. Hibbert, F.S.I., pointed out that the object of the Guild dealing with the formation of a Federal Council of all Architectural Societies had now come about in spite of the derision with which it was met two years ago. The Chairman pointed out the strength and usefulness of the National Union of Teachers in reference to school work and how many improvements in school planning had their origin in that body. At the conclusion of the meeting Mr. J. E. Winfield was elected a member of the Council of the Guild.

OUR CONTEMPORARIES FROM OVERSEAS.

THE *New York Architect* (New York) contains a number of beautiful illustrations as well as plans of the Hotel Rector, a sixteen-storey building on New York Broadway, opened at the close of last year, from the designs of Messrs. D. H. Burnham & Co. Another skyscraper illustrated is the New Whitehall Building, of which Messrs. Clinton & Russell are the architects.

The *Western Architect* (Minneapolis) is this month practically a monograph of the Capitol of South Dakota, of which Mr. C. E. Bell is the architect, and which is illustrated by a full series of photographs, as well as geometrical drawings.

La Construction Moderne (Paris) illustrates the new Palace of Justice at Rome, of which Signor G. Calderini is the architect, which has been in course of construction since the year 1888.

Der Architekt (Vienna) is occupied chiefly with domestic architecture from examples in Austria and Hungary, an exception being a new theatre in Budapest of ultra "new-art" treatment.

Construction (Toronto), apropos of the death of Mr. John M. Carrère, illustrates the New Public Library of New York, which was recently opened for the first time to permit the public to view the remains of its designer. Canadian buildings illustrated are the Head Office of the Royal Bank of Canada at Montreal and the Bank of Commerce at Winnipeg.

Engineering Record (New York) describes how an eighteen-storey building, 220 feet high above the street level, was built in 69 days, chiefly during December and January. This is known as the Underwood Building at the north-east corner of Vesey and Church Street, New York.

COMPETITION NEWS.

COVENTRY.—Mr. E. Guy Dawber, F.R.I.B.A., the assessor in the Coventry Municipal Buildings and proposed Town Hall competition, has delivered his award to the Council, and has selected the following as the three premiated designs:—(1) Messrs. Garratt, Simister, Buckland & Farmer, Norwich Union Chambers, Congreve Street, Birmingham; (2) Messrs. Couch & Barnard, 82 Victoria Street, Westminster, S.W.; (3) Mr. Herbert J. Rowse, Great Crosby, Liverpool.

LIVERPOOL.—The Finance Committee of the City Council last week, after considering plans prepared by the City Surveyor, Mr. Shelmerdine, and the Baths Superintendent and Engineer, for proposed baths on a portion of the old George's Dock site, decided to invite designs from architects for the elevations. Three premiums of one hundred, fifty and twenty-five guineas will be offered for the designs adjudged to be first, second and third in the order of merit. It is understood that the estimated cost of the scheme is about 70,000l.

LONDON.—Mr. J. W. Winter, architect, Sheffield, has been successful in a competitive scheme for the proposed St. Mary's Hall and Institute, Osterly Park, London, to cost 3,000l.

ST. AUSTELL.—The local cottage hospital committee recently invited architects practising in the county of Cornwall to submit designs for a cottage hospital, to be erected on the Trewoon Road at a cost of not more than 1,500l. Three premiums, viz., 12l. 12s., 8l. 8s., and 5l. 5s., were offered. Mr. H. L. Thornely, F.R.I.B.A., the assessor, has now selected the designs submitted by Messrs. R. F. Wheatley, F.R.I.B.A., & E. H. Sedding, F.R.I.B.A., of Plymouth.



[The Editor will not be responsible for the opinions expressed by Correspondents.]

Undeveloped Land Duty.—A Warning.

SIR,—Demands are now being made upon owners in all parts of the country for the new annual land tax of one halfpenny in the pound on the capital value of all land possessing any value over and above its value for agricultural purposes.

As the operation of the Budget land taxes is so uncertain, and so little understood, may I draw attention to the following important points:—

1. That no undeveloped land duty can be charged on any agricultural land let on a tenancy created before April 30, 1909, until the determination of such tenancy.

2. That, where under the terms of the lease or agreement the owner has power to take the whole or any part of such land for building or other purposes, the duty cannot be charged until the earliest date, after the commencement of the Act, upon which the tenancy could be determined.

The commencement of the Act was April 29, 1910.

It is therefore clear that where land was let even on only a yearly tenancy (and there was no power to determine the tenancy under any special arrangement) no duty can be charged until after Michaelmas 1911, as this would be the earliest date on which the tenancy could be determined by notice, and in the case of a Lady Day tenancy no duty can be charged until Lady Day 1912.

Already several of our members have been served with demands for this tax for the years ending March 31, 1910 and 1911 respectively, but, acting on advice, have objected and been discharged from the liability. It is safe to say that very little undeveloped land duty becomes payable until after 1912, and owners are urged to carefully investigate the demands made upon them.—I am, sir, yours faithfully,

C. H. KENDERDINE,

Secretary of the Land Union.

St. Stephen's House, Westminster, London, S.W.:
April 12, 1911.

Licentiates.

SIR,—I shall be very much obliged if you will kindly call the attention of your readers to the fact that by a resolution of a special general meeting on March 20, confirmed at a subsequent general meeting on April 10, the Council was authorised to continue to elect Licentiates until the end of June 1912. I may mention, however, that although the last date on which Licentiates can be elected is June 30, 1912, all application forms, drawings, &c., must be received here before May 31, 1912, at the very latest.—Faithfully yours,

IAN MACALISTER,

Secretary, Royal Institute of British Architects.

April 12, 1911.

The Decorator in Ancient Times.

SIR,—In reading the report of Mr. Noel Heaton's paper in your current publication, there is a point mentioned on page 233, in the first column, which is apparently contradictory.

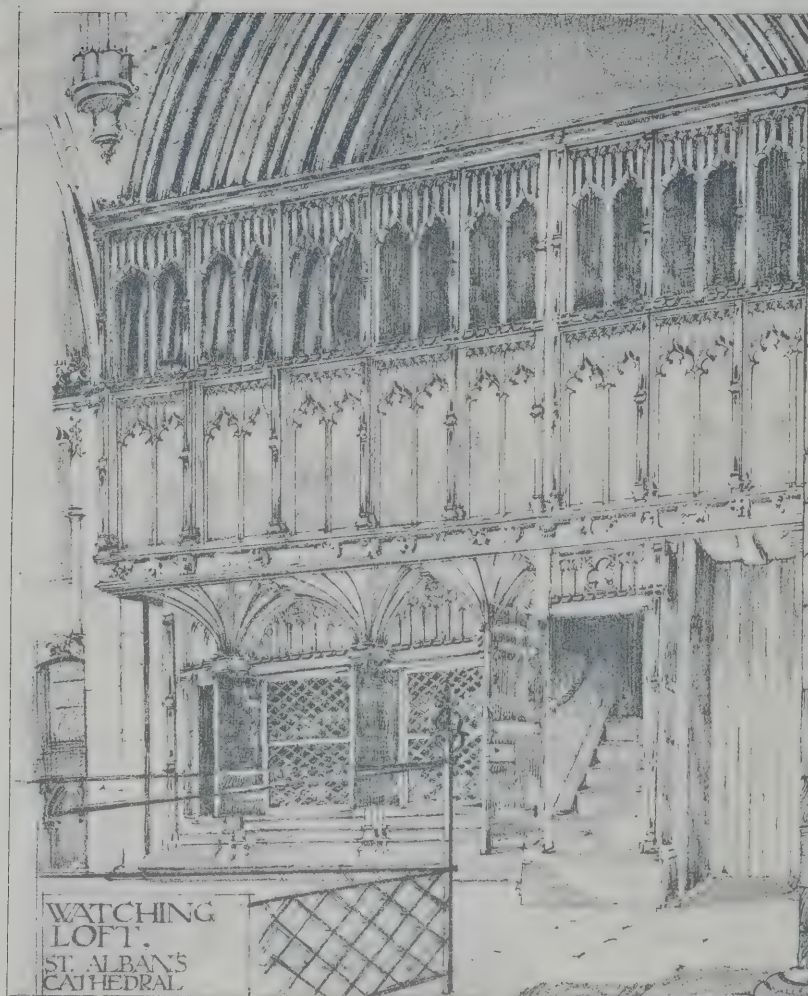
Dealing with the analysis of the plasters, the author states "that it is composed of pure lime without any additions," following this up with an analysis giving calcium oxide 51.93 per cent., which, being combined up with CO₂, gives practically the figure of 41 per cent. found by analysis. The author further states that the analysis given is not inconsistent with the possibility of marble dust (CaCO₃), but the contradiction is seen in the closing paragraph: "Two years (of experiments) has failed to reveal any other material in the original plaster than caustic lime"—after giving a characteristic analysis of carbonate of lime.

Trusting that the answer to the above will interest others, as it will yours respectfully,

GEO. H. ROWE.

THE death occurred suddenly last Sunday at Woodhall Spa of Mr. George Hastings Fowler Jones, architect, of Chestnut House, York. Mr. Jones was associated in business originally with his father, an ecclesiastical architect of some eminence. He had been employed in the design of several important public buildings. He was for some years secretary to the York School of Design, which was founded by William Etty, R.A., and he took a deep interest in all matters pertaining to art in the city.

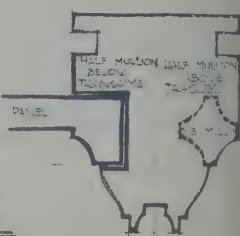
THE late Mr. James Ogden gave 4,378l. to the Rochdale Corporation in 1901 to be spent on pictures for the Art Gallery, on condition that the interest should be allowed to accumulate for ten years. The principal now amounts to about 6,400l., and the Art Gallery Committee have just made their first purchase under the endowment. The picture is by Mr. Edward Stott, A.R.A., and is entitled "There was no Room at the Inn," representing the Nativity. It was exhibited at the Academy last year.



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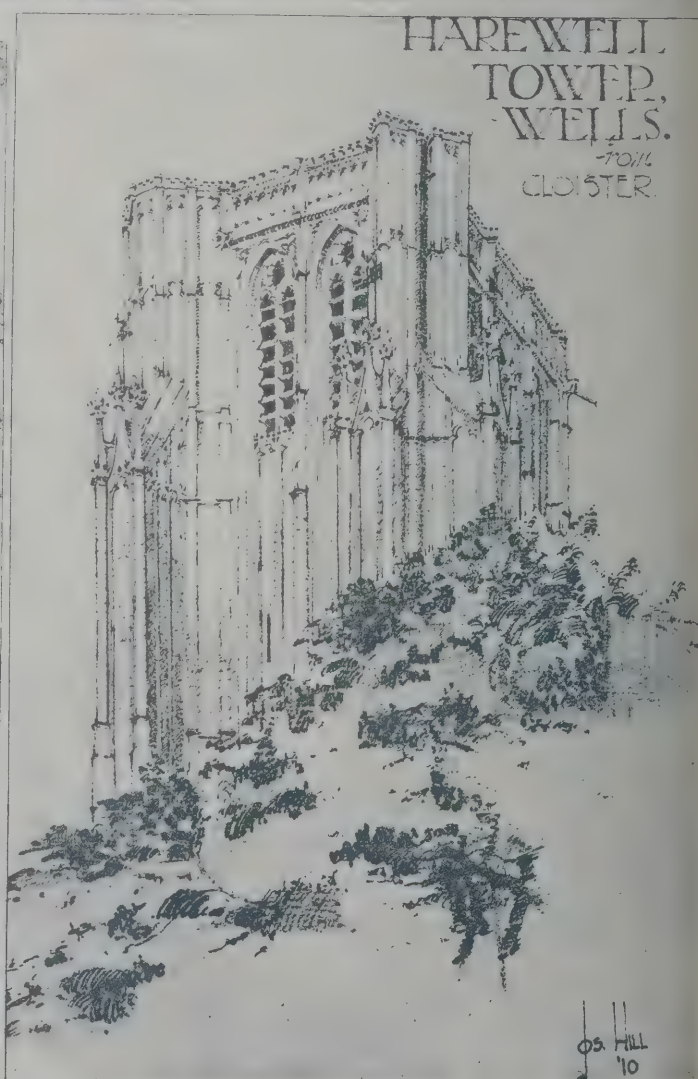
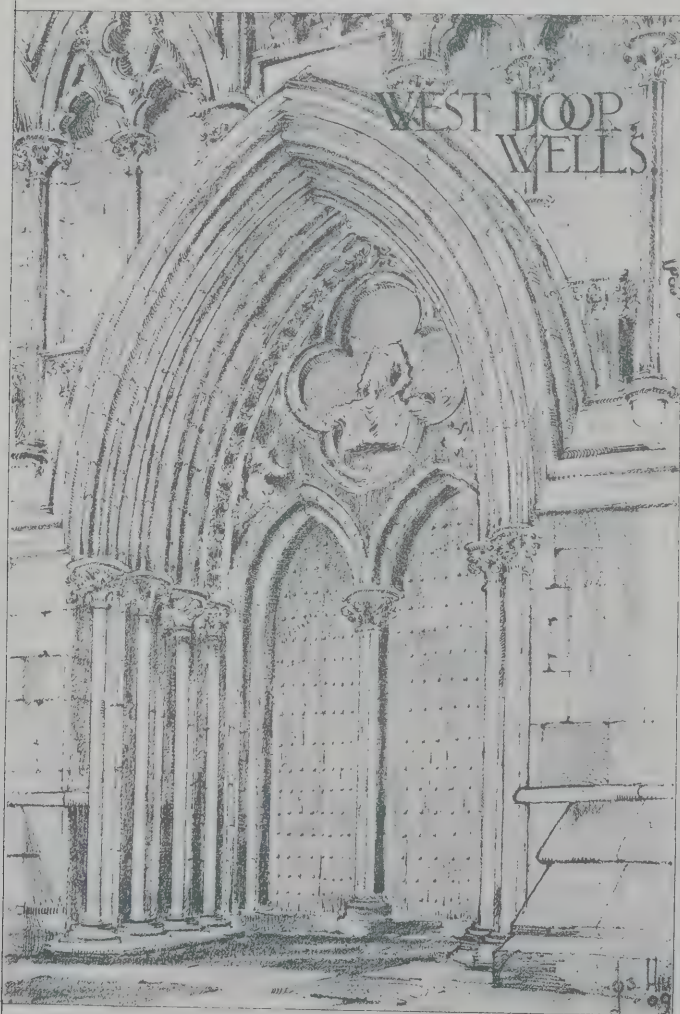


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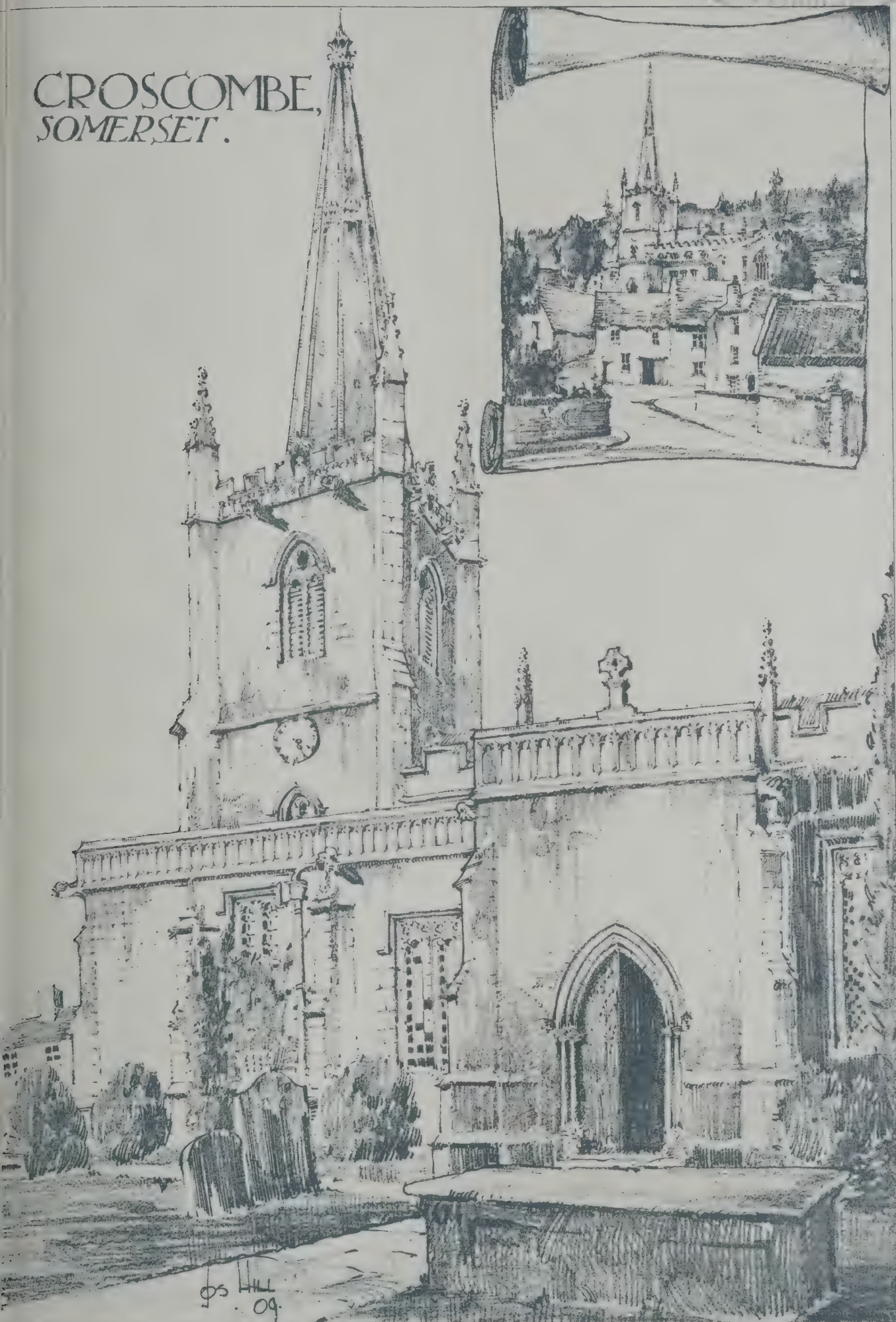
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CROSCOMBE, SOMERSET.



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DRAWINGS SUBMITTED FOR THE PUGIN STUDENTSHIP, 1911.

By MR. J. HILL.

The Architect, April 21st 1911.



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ST. PETER'S CHURCH, LANCASTER.
RESTORATION, ALTAR, etc., by MR. G. GILBERT SCOTT.



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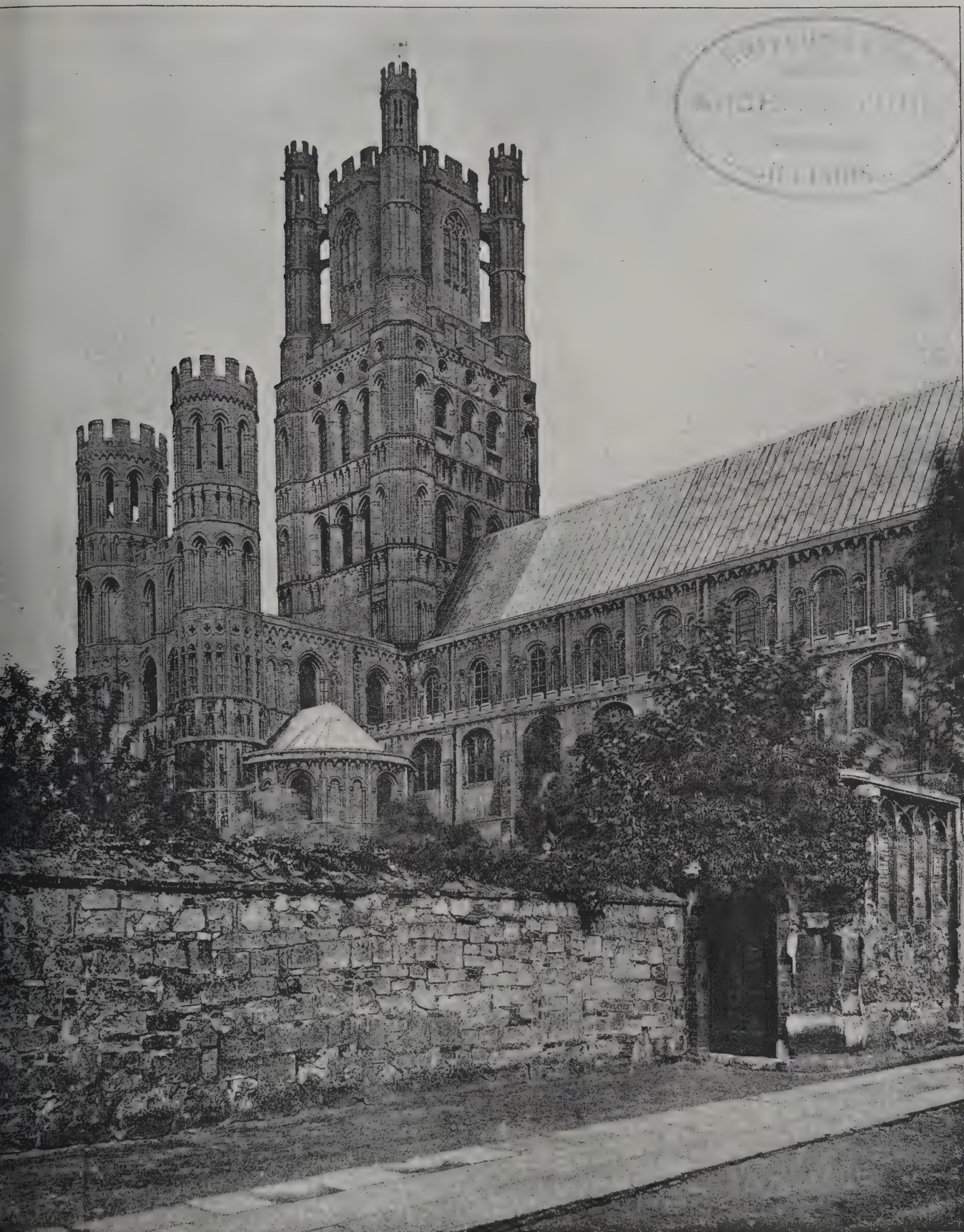
No. 180 BOND STREET, W.

MR. WILLIAM FLOCKHART, F.R.I.B.A. Architect



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CATHEDRAL SERIES, No. 666.—ELY: NORTH TRANSEPT, OCTAGON, AND PART OF NORTH SIDE OF NA



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CATHEDRAL SERIES. No. 667.—ELY: WESTERN TOWERS AND SOUTH SIDE OF NAVE.

The Architect.

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FORTHCOMING EVENTS.

Monday, May 1.

Royal Institute of British Architects : Annual General Meeting. Concrete Institute : Visit to the Building Trades Exhibition at Olympia. Lecture by Mr. R. W. Vawdrey on "Reinforced Concrete."

Society of Engineers : Paper by Mr. H. C. H. Shenton on "The Protection of Water Supplies," to be read at the Institution of Electrical Engineers, Victoria Embankment, W.C.

Tuesday, May 2.

Royal Society of Antiquaries of Ireland : General Meeting at Kilkenny, May 2-3.

Building Trades Exhibition : Institute of Clayworkers.

Wednesday, May 3.

Royal Archaeological Institute : Miss E. K. Prideaux on "The Sculptured Figures on the West Front of Exeter Cathedral Church," to be read in the apartments of the Society of Antiquaries, Burlington House, W.

Royal Society of Arts : Mr. A. W. Gattie on "The Improvement of London Transport."

Building Trades Exhibition : Visit of the Society of Architects.

COVENTRY MUNICIPAL BUILDINGS COMPETITION.

THIS is not one of those competitions in which the first premiated design is markedly superior to all others; indeed, we fail to see that as regards the plan it is superior or even equal to some that are not premiated, whilst it contains what seem to us to be serious faults, and we cannot agree entirely with the laudatory description given of it by the Assessor.

Mr. DAWBER says in his report: "The problem was not an easy one to solve, and as a consequence it has produced a series of designs greatly varying in merit." He might have added with truth "and in solution." Of the 130 designs submitted no two closely approximate, though there are some easily recognisable types, and the three premiated designs though widely differing are alike in the adoption of one principle which we must assume to have found favour with the Assessor and to be the cause of his preference.

The site, which is restricted in area for the accommodation required, is, although irregular in form, rectangular in its lines except for the principal frontage to Earl Street, a continuation of the old High Street of Coventry. This takes with the lines of the other boundaries, and is itself an irregular curve. The three premiated designs all show a symmetrical front to Earl Street, with a range of rooms and a corridor behind following its line more or less closely and having the principal entrance in the centre. All the other lines in these plans follow the rectangular boundaries of the site. This, then, appears to be the principle that alone commended itself to the Assessor, being the only characteristic, as far as we can see, that the three premiated designs have in common.

One of the most important points that has to be determined at an early stage by the designer of municipal buildings is the treatment of the corridors, whether they are to have rooms on one side only or on both sides. In this case the restricted area of the site has rendered it difficult to adopt the former method, which is undoubtedly preferable when space and funds permit, but very few competitors have boldly adopted the second method throughout. In the first premiated design a compromise has been effected; most of the corridors have rooms on one side, but some on both. Like most compromises, this is illogical. If some corridors can be lighted with rooms on both sides, why cannot all? The use of corridors, with rooms on one side only, leads, in a restricted and awkward site, to small internal areas, and the lighting of some of the rooms in the first premiated design appears to us to be deplorable. What sort of light can be expected from a well hole that is a right-angled triangle on plan 28 feet on the base and 10 feet vertical height? Can a committee room be adequately lighted with a high wall 10 feet in front of its principal windows? Even the Waterworks

Department does not seem to be properly treated with a high wall 16 feet in front of its windows. The Assessor's report says that the plan "is most economical." We fancy it will cost a good deal in white glazed brick and electric current.

Certain positions were suggested for some of the departments in the instructions to competitors, but it was made clear that these suggestions were not binding. MESSRS. GARRATT, SIMISTER, BUCKLAND & FARMER in the first premiated design have placed on the ground floor the Gas, Electrical, Rates and City Treasurer's departments; on the first floor, the Council Chamber, Committee rooms, &c., and the departments of the Town Clerk, the City Engineer and the Waterworks; on the second floor, the Medical Officer, the Education Department and the caretaker. In the basement they have located the Weights and Measures Department, and the stores, sample and testing room of the City Engineer. The Assessor's report says of this plan that "each department has been kept distinct and self-contained." We fail to understand this when the provision for the City Engineer is partly on the first floor and partly in the basement, which latter, by the way, is below the level of St. Mary's Street, the lowest part of the site, with windows whose sills are on the pavement level and on the street frontage, so that the windows could not be opened without the probability of the City Engineer's stores being gratuitously increased by passing boys.

It was clear from the instructions that Mr. DAWBER would attach importance to the relative amounts of corridor and room space, as the colouring of the plans was directed to show this and this alone. The report says of the first premiated plan that "the corridors are few and short." There is not a great amount of red, it is true, but there are several internal corridors and thoroughfare rooms that are coloured yellow, and as to there being "no wasted space" we cannot see the economy of two corridors side by side and communicating even if one is tinted red and the other yellow.

A good point in the planning of the Council Chamber, Committee rooms and Mayor's Parlour is their arrangement *en suite* so that they are admirably adapted for civic receptions, but against this the ante rooms are all corridors, and the Mayor and councillors cannot reach their rooms without passing through the ante rooms in which deputations may be waiting. In the case of hostile deputations the worthy councillors would be in a state of siege.

We were amused with the planning of the sanitary tower. It is religiously cut off, hospital fashion, by a cross ventilated lobby, but one w.c. has no external wall, and is merely an inside cupboard opening out of the lavatory.

Most of the competitors have found that the space required for the Municipal Buildings did not leave room for



EDINGTON CHURCH, WILTS, FROM SOUTH

a well arranged Town Hall of the area demanded, with 1,200 seats on the ground floor and 300 in the gallery, and have availed themselves of the permission to put 500 in a gallery and 1,000 on the main floor. In the first premiated design this is professedly done, but we can only count about 850 seats instead of the 1,000. Hence the plan looks very nice, and crush rooms, side corridors and other adjuncts are provided, including an assembly hall of good size which seems to be entirely innocent of daylight.

The elevations of the first premiated design are very satisfactory, and the Assessor's description is quite accurate, the symmetry of the Earl Street front and a good tower at the lowest point of the site giving a truly monumental character. We are inclined to suppose that Mr. DAWBER has been caught by the design of the elevations and rather cleverly spoofed by the plan.

The second premiated design, by Messrs. COUCH & BARNARD, places on the ground floor the Gas, Electric Light, Rates and Town Clerk's departments; on the first floor, the Council's accommodation, the City Treasurer and the City Engineer; on the second floor, the Medical Officer and Education departments and the caretaker; and in the basement the Waterworks and the Weights and Measures. Although there is apparently more red colour on this plan than on the first premiated, we consider that value has been obtained both in convenience and effect, and that the plan, in actual working, would be better than the successful one, even though the lighting of some of the rooms is not perfect as, for instance, when a room 25 feet deep is supposed to be properly lighted from an area 16 feet wide with a four-storey building in front of the windows. As we have said above, this plan follows the principle adopted in the plan of the first premiated design, but it does not do so in elevation by any means. Messrs. COUCH & BARNARD consider that the Roman Doric order treated in the French manner even to the inclusion of the Imperial eagle will "harmonise with the character of the old" buildings, St. Mary's Hall and

St. Michael's Church. Apart from the harmony the design of the elevations is dignified and good.

Mr. HERBERT J. ROWSE, the author of the third premiated design, has located on the ground floor the Town Clerk, the City Treasurer, the Gas and Rates departments; on the first floor, the Council, the City Engineer and the Waterworks departments; on the second floor the Medical Officer and the Education departments; and in the basement the Weights and Measures and the Electric Light departments. Mr. ROWSE has regulated his Earl Street front to a continuous circular curve of large radius and, as in the other premiated designs, produced a symmetrical elevation. Certainly this plan has too much corridor, some of it distinctly wasteful, as there are no rooms opening from a considerable portion. This third premiated design also presumes the Roman Doric order to be in harmony with St. Mary's Hall and St. Michael's Church, though it is here treated in an English and somewhat modern manner.

Of the 127 designs that have been unfortunate, the majority have adopted corridors with rooms on one side only, and although this has usually led to a multiplicity of internal areas and light wells, in some instances all the rooms are fairly well lighted. The few who have placed rooms on both sides of the corridors have thereby produced compact plans with well lighted rooms as, for example, No. 14. It is difficult to understand wherein lies the wisdom of the Assessor's judgment in selecting for the first place a plan which embraces the disadvantages of both methods of corridor treatment, when there are plans which give all the advantages of each respectively. In the majority of cases it is true that "each department has been kept distinct and self-contained" to a greater degree than in the first premiated plan, so here we fail to recognise its superiority.

The modern vogue of axial planning has obsessed many of the competitors, who have gone out of their way to



EDINGTON CHURCH, WILTS, FROM NORTH-WEST.

evolve axes and thereby manufactured difficulties for themselves, which, however, have often been surmounted very cleverly. With the peculiar shape of site in this instance, we think axes are not worth striving to attain.

There are so many of the unfortunate designs possessing merit in a greater or lesser degree that we can find space for only a few words of criticism. No. 11 has a good plan, which is rather extravagant in length of corridor, some of which does not do its fair share of work. No. 13 is axial and cleverly symmetrical, but some of the rooms are lighted from small areas.

No. 14, as we have already noted, has adopted the principle of placing rooms on both sides of the corridors, and is one of the best plans of the type. After all, is it not better in municipal buildings to have well lighted rooms and borrowed light to corridors than brilliant corridors and dull rooms? No. 26 has a simply laid out plan, but with the faults of drawing office and Medical Officer's laboratory looking south into an area. This design has good elevations of the modern competition type of Renaissance. No. 39 has a fairly good plan with a commendable modern Gothic treatment of elevations. No. 43 shows great ingenuity in struggling with eccentrically-shaped rooms, which are good in effect. The elevations here also are of the modern competition Renaissance type.

No. 55 has excellent elevations, and in plan has adopted a device common to several others of top-lighted rooms on the ground floor. No. 57 is an example of a fair plan of axial type, following the most favoured line bisecting the angle between the rear of the site and Earl Street. This design has a good detail drawing. No. 64 has a quite unusual type of plan with a grand staircase leading to an assembly room. No. 66 has made a bold attempt at a symmetrical plan which has many good points. The elevations are well treated in a Renaissance manner. No. 69 has endeavoured to get over the awkward line of Earl Street and arrange a symmetrical

plan by a recessed hollow on the front line. The one-sided corridor is adopted, but the Gas Showroom seems to be rather dark.

No. 72 is one of those adopting the direct lighted corridor, who has produced a good plan. The elevations have a decidedly sturdy character combined with fairly good Gothic detail. No. 79 is one of the pronounced axial type, resulting in a quite decent plan. No. 81 is another axial plan of simple arrangement, with the Council Chamber next Earl Street, a position avoided by most competitors. No. 87 has an implicit belief in the capabilities of modern steel construction and reinforced concrete, and has arranged his plan on various floors with a sublime disregard of walls below. The internal areas are scarcely satisfactory. The elevation and detail show a Gothic treatment that is neither too aggressively modern nor too strictly archaeological. No. 93 is a good plan, thoroughly architectural in conception, with an ante room to the Council Chamber 1,200 square feet in area. One room is lit from a court 14 feet wide. The elevations are good. No. 105 is a good plan, with rooms both sides of corridors. The elevations are decidedly twentieth-century Gothic, but of excellent character. No. 113 has a plan free from small areas and with a short length of corridor. The detail is quite good. No. 118 has a rather good plan with Renaissance elevations well detailed.

We append Mr. GUY DAWBER's report on this competition:

I have most carefully examined the 130 designs submitted in competition for the Municipal Offices and Town Hall, and after a long and exhaustive comparison have placed first that numbered 31.

The problem was not an easy one to solve, and as a consequence it has produced a series of designs greatly varying in merit.

The instruction to competitors that "the Council felt strongly that the new building should harmonise with the character of the old" somewhat hampered the independent



EDINGTON CHURCH, WILTS, FROM SOUTH-EAST.

treatment of the subject, and competitors have either dealt with it in a so-called Gothic spirit, or have thrown this aside and designed their buildings in the freer Classic style of the day.

The site is a somewhat difficult one to deal with, as the Municipal Offices, having to occupy the entire frontage to Earl Street, necessitated the buildings being spread out, and tended to the multiplication of corridors leading to the various departments.

The number and variety of these departments, and their grouping and relationship to each other, all constituted an important factor in any decision upon the merits of the respective plans.

The author of design marked 31 submits an extremely well-thought out scheme for both the Municipal Offices and the Town Hall. The plan is admirably arranged and is most economical, the corridors are few and short, and there is no wasted space; each department has been kept distinct and self-contained, and the Municipal Offices can be erected quite independently of the Town Hall, and do not encroach unduly upon the Hay Lane frontage.

The elevations have been broadly treated with a certain amount of Gothic feeling, simple yet monumental in character, which would harmonise well with the style of the old buildings in the city, and, in my opinion, the whole scheme is by far the best one submitted in the competition.

I further consider that the second best design is that numbered 104, and the third that numbered 76.

Messrs. Stoner & Sons, quantity surveyors, of London, have checked the cubical contents of all three designs, and whilst they are of opinion that the scheme submitted for the Municipal Offices numbered 31 could be built for the sum stipulated, yet they think a somewhat too sanguine view has been taken of the cost of the Town Hall, but this would depend upon the character of the building as worked out in detail.

I therefore advise, subject to the fulfilment of the conditions and instructions to competing architects, that the author of design No. 31 be appointed architect to the new buildings and receive, in addition, the sum of 150*l.*, that the author of design No. 104 be paid a premium of 175*l.*, and the author of design No. 76 receive a premium of 125*l.*

EDINGTON AND ITS MONASTIC CHURCH.

THAT noble pile of masonry, Edington Church, nestling amongst the trees in the valley of the Wiltshire Downs, was dedicated in the year 1361 by Robert Wyville, Bishop of Sarum, to the honour of St. Mary, St. Katherine, and All Saints. If not wholly built by William de Edington, the celebrated Bishop of Winchester, there can be but little doubt that the chancel was erected by him when other parts of the building were adorned and renewed. It is considered the only perfect monastic church remaining in the county.

William de Edington, a native of this place, founded a chantry or college here for a dean and twelve secular priests about the year 1347, but this college, by desire of Edward the Black Prince, was converted in 1358 to a monastery of the Augustinian order of "Bon-hommes," which was governed by a rector.

The rectory of Edington belonged to the Abbey of Romsey, of which the rector was a resident prebendary, and the parochial duties, with the services in the church, were discharged by a vicar.

In the reign of Henry VIII. the establishment was dissolved, and the site and buildings granted to Sir Thomas Seymour.

It is a large, cruciform edifice of stone, in the Transition style from Decorated to Perpendicular, and consists of a chancel, clerestoried nave, transepts, and south porch with parvise, and a fine embattled tower rising from the intersection containing six bells. The windows, niches, buttresses, pinnacles, &c., of the chancel are very fine examples of the Christian architecture of the age when the Bishop lived, and will be found to afford satisfactory evidence of being coeval with, and analogous to, the west front of Winchester Cathedral.

There is a window containing glass of the fourteenth century; the windows of the north aisle also retain a great deal of the original stained glass. A piscina and rood screen still exist. The nave contains a richly-carved octagonal Jacobean pulpit. In the chancel is placed a large, carved



INTERIOR OF EDINGTON CHURCH, WILTS.

monument, consisting of two statues larger than life, by Chantrey, to commemorate Sir Simon Taylor, Bart. Amongst others there are two canopied tombs of the fourteenth and fifteenth centuries.

Bishop Edington, as stated above, was born in the village of his name, but neither the year of his birth nor the condition of his relatives appear to have been recorded. His early life is equally obscure. Whilst a student at Oxford he appears to have attained a proficiency in all the scholastic learning of the age. Having acquired the acquaintance and favour of Edward III., who highly regarded him for his distinguished talents, he was, in April 1345, made treasurer of England, and in the following year consecrated Bishop of Winchester. This latter promotion was bestowed by monks who had previously elected John le Devenith, one of their own body, to fill the vacant see. But by way of compromise he was made Abbot of Canterbury.

In 1350, on the institution of the Order of the Garter, Bishop Edington was appointed the first Prelate, or Chancellor of the Order, a dignity which was to descend to all his successors, Bishops of Winchester.

In 1357 he was constituted Chancellor of England. He

died in the year 1366, after a very distinguished career, and was buried in the nave of Winchester Cathedral, which he had begun to re-build at his own expense, and he also bequeathed a considerable sum of money for the work to proceed.

The domestic buildings of the monastery at Edington were on the north side of the church, and of which there remains the Prior's house, now a farm-house. This contains some modelled plaster ceilings and some very fine oak panelling. The north aisle formed one side of the cloister garth, the windows of the aisle being shorter than on the south side, and the lower part of the side window of the transept built solid to admit of the cloister roof coming below them. It may be mentioned that the weather mould over the roof still exists.

The entrance to the church from the monastery was by the doorway into the north aisle at the south-east angle of the cloister, and the arch of the doorway is unlike any other throughout the building, enriched with carving.

The church was built for the double purpose of a monastery and a parish church—its plan has been arranged for this, and the details of the separate parts have been designed to emphasise their use.



SCREEN IN EDINGTON CHURCH, WILTS.

It will be seen that the chancel (the monks' choir) and the transepts, which were used as chapels, have a distinctly different treatment to the nave and aisles, which formed the parish church. The windows of the monastic church have a distinct type of tracery; their mouldings are richer and more varied; plinths on the outside and string courses both inside and outside are carried round this part only; the buttresses here are terminated by pinnacles, and the gargoyles are carved, whilst those of the parish church are plain. The chancel being the church of the monastery, the parish altar was placed under the western arch of the tower, the way to the chancel from the cloister being behind it.

The chancel is divided from the nave by a beautifully-carved wooden screen, standing on a plinth of stone. The screen itself is filled with plain panels below the middle horizontal rail, and the grooves in the mullions of the upper part indicate that there were solid panels here also, behind the existing traceried heads. Thus with the exception of the open framing of the upper half of the doors, the screen entirely shuts out a view of the chancel from the nave. The doorway has a four-centred arch supported by shafts with carved capitals on the joints. The loft over is seven feet wide, the eastern face being supported by a carved beam.

A noticeable feature in the design of the church is that effect is produced by good proportions, solid construction, and rich mouldings rather than by carving. The leading principle in the construction of the groups of mouldings at Edington is that which is a special characteristic of Perpendicular work—that all lie on the splay or chamfer plane, and the projections of the various members all touch the line of that plane. The splays, whether sunk, or not, are all parallel to this line, so that the mouldings are, as it were, sunk from the surface represented by it. This applies not only to jamb and arch mouldings, but also to the undersides of string courses and cornices.

The church was restored in 1889-92 at a cost of about 8,000*l.*, and the strict and laudable attention paid to the chancel during the renovation by Mr. Watson Taylor, the lord of the manor, has resulted in this once beautiful and interesting part of the edifice being restored to its pristine character.

YORK AS AN ART CENTRE.

MR. C. F. BELL, the Curator of the Department of Fine Art, Ashmolean Museum, Oxford, who recently visited York in order to see the Etty collection of pictures, has written an interesting letter to the Chairman of the Etty Exhibition and Statue Committee, in the course of which he says:—

The impression which a stranger interested in museums and art galleries gets from a visit to York is one of magnificent opportunities awaiting development. The city is endowed with a beautiful and extensive site—the ancient precinct of St. Mary's Abbey—devoted to scientific and artistic purposes, and upon this site is a group of architectural remains of matchless interest and several carefully-planned modern buildings, ideally capable of adaptation into a series of museums. The whole may be said without fear of contradiction to afford material for a scientific, archaeological, and artistic park of quite unique character, interest, and charm.

As for the collections, the library and scientific collections of the Yorkshire Philosophical Society have long been famous; the series of local Roman antiquities is not only of the highest archaeological order in itself, but makes that poignant appeal to the imagination which only antiquities exhibited upon what is practically the actual spot of discovery can make.

The contents of the cases of mediæval pottery are certainly not surpassed, if, indeed, they are equalled, except, perhaps, by those of similar wares in the British and Guildhall Museums; and contain numbers of specimens not to be matched anywhere. It is not too much to say that nobody can pretend to a knowledge of mediæval pottery who has not studied the York collection. Yet the whole effect is so sadly marred by crowding and lack of arrangements that nobody but the special student can realise the extent and meaning of the collection.

The manner in which the priceless Roman antiquities are displayed is mean and unworthy, the impossibility of controlling the temperature and humidity of the atmosphere in the old hostel—picturesque and appropriate as it is in many ways for its purpose—is becoming increasingly evident from the condition of the specimens and the mounts. Many of the bronze objects are beginning to decay in an alarming manner.

Not less precarious is the condition of the famous tapestry maps in the Lecture Hall, which are in a deplorable state of decay and dirt, and require immediate attention.

Turning to review the condition of things upon the northern side of the wall, which at present divides the Abbey precinct, a state of affairs almost the counterpart of that hitherto indicated presented itself. There are extensive modern buildings in excellent repair erected in anticipation of collections which have not yet arrived to fill them. The vast block of buildings, containing the Corporation Art Gallery, with the School of Art and attached halls, exists, so far as museum purposes are concerned, to enshrine the Burton collection, a few isolated pictures, and two or three cases of loans from the Victoria and Albert Museum, in one of its smaller apartments. The collection contains many pictures of interest and charm, which with sympathetic hanging might be made even more effective than at present.

In France it has long been the excellent custom of the State Ministry of Fine Arts to concentrate the interest of provincial museums on the productions of the artists to whom the towns where such museums are located have given birth, thereby stimulating patriotism and encouraging talent in local centres. In England this duty has fallen to private patrons, and has latterly been accepted as part of the duty of municipal bodies. It is only necessary to instance as fruits of this policy the admirable collections of the works of David Cox in the Birmingham and of W. J. Muller in the Bristol Corporation Galleries.

York has always been fertile in artistic genius, the only city in Europe which can boast of a school of glass-painters of the highest order, which flourished continuously for above five hundred years. She has in latter days given birth to a galaxy of painters, Etty, Albert and Henry Moore, and many others, dead and living, of scarcely less eminence. The capital of the largest county in the kingdom, a county not willingly consenting to stand second to any other in wealth and patriotism, endowed with the materials of a perfect museum and the incentive of local pride in her great men to urge her to combine these materials, it would seem that all that is required is some concentrated effort and a little contagious enthusiasm amongst the citizens. The existence of these qualifications, if only amongst a few individuals, has manifested itself in the recent Etty Exhibition; an admirable display and an excellent example of what the organised determination of a handful of enthusiasts can do. May it mark the beginning of a brighter era for the arts in this city! In the first place, by enriching the permanent collection with a group of characteristic paintings by this great master. In the second, by leading to the formation of similar exhibitions of the works of Albert and Henry Moore and of other York artists which may also be expected to leave behind them some permanent residuum in the Corporation Gallery. In the third, by awaking the civic consciousness to the fact that everything is not for the best in the present distribution of the buildings and collections which the city is to be envied and congratulated for possessing.

COMPETITION NEWS.

COVENTRY.—Coventry City Council on Tuesday accepted the award of the Assessor in the competition for designs for proposed Municipal Buildings and Town Hall, and decided to take the necessary steps to proceed with the Municipal Buildings portion of the scheme at an estimated cost of 49,469*l*. The City Council accordingly appointed Messrs. Garratt, Simister, Buckland & Farmer, architects for the new buildings, leaving the Town Hall portion of the scheme to be proceeded with at some future date, the estimate for this portion of the work being placed at 15,072*l*.

ILFRACOMBE.—The Urban District Council has decided to invite competitive plans for a free library.

NEWTON ABBOT.—In response to the invitation for competitive plans for the proposed Seale-Hayne College some 60 or 70 applications have been received for particulars. Prizes of 100*l*., 50*l*., and 30*l*. are being offered by the Governors for the best set of plans, and the Assessor, Mr. Smith, J.P., of Reading, has provided block plans on which the competitors have to base their work. The competitors have to design a building the cost of which will not exceed 20,000*l*., but at the same time they must provide for extensions to be carried out at some future date, in character with the main building, at an estimated cost of 10,000*l*. Mr. Smith will judge the competitive plans, and it will be open

to the Governors to adopt any set they please. The College will be erected on the Houghton Barton Estate, situate about a mile from Newton Abbot on the main road to Ashburton, and in the parish of Highweek. The competitive plans have to be submitted to the Assessor by the end of June.

SOUTHAMPTON.—Twenty-six sets of designs were sent in for the competition in connection with the new buildings proposed to be erected for Hartley University College. The award of the assessor, Mr. H. T. Hare, F.R.I.B.A., is as follows: 1st, Messrs. Clyde Young & H. S. East, 6 Lancaster Place, London, W.C.; 2nd (value 100*l*.), Mr. Edwin Cooper, 12 Gray's Inn Square, London; 3rd (50*l*.), Messrs. J. H. Hickton & Farmer, Birmingham.

SOUTH MOOR.—Out of 40 plans submitted for a parochial hall and church institute to be erected at St. George's Church, South Moor, that of Mr. James Garry, West Hartlepool, has been accepted.

WORCESTER COLLEGE, OXFORD.

By the Rev. S. H. W. HUGHES-GAMES, M.A. (formerly Scholar of Worcester College).

EVERY old building or group of buildings is like a palimpsest or corrected manuscript of some ancient tragedy or comedy—as to which of the two depends partly on the building and partly on the point of view. The elements of tragedy and comedy blend largely in the history of a college, and also not a little in its buildings.

In the library of Worcester College are some manuscript copies of forgotten plays; they are much corrected, they are brown with age, and they are bound together in a grey old cover, stained and marked in the lapse of years. The plays are not all of the same date or by the same hand; some are hardly legible, and the authors of some are unknown. It is much the same with the College buildings. To make the simile more complete we must imagine many of the pages of the plays torn out and others substituted in their places, and, indeed, some without substitutes at all.

Though in one sense "Worcester" is one of the youngest of Oxford colleges, in another it is among the oldest. Under its present name the College dates only from the year 1714, but for the real origin of the foundation we must go back as far as 1275, to the reign of EDWARD I. While the King was endeavouring to consolidate British rule by placing Wales and Scotland, with England, under one common Government, and nearer at home was using all means in his power to curtail the rights of the Church and the barons, Benedictine monks were considering how best they could secure proper supervision and accommodation for their students sent to Oxford for purposes of study. A meeting of the members of the Order in the province of Canterbury was held at Abingdon, and there it was decided to erect buildings at which the "brethren of our order, who are to be sent from the various monasteries to study, may live properly." Before this decision was carried into effect St. Peter's, Gloucester, one of the Benedictine houses, determined independently to build a college at Oxford. In 1283 JOHN GIFFARDE, of Brimsfield, founded a cell for thirteen monks of St. Peter's at Oxford "for the health of his soul," and that of his wife, MAUD LONGESPEE, who had been widow of the Earl of SALISBURY's son, and whom he had carried off by force, as she alleged, to his Castle of Brimsfield. Seven years later, with the consent of JOHN GIFFARDE, Gloucester College became part of a larger college—really a collection of cameræ or cells—for all the Benedictine Order in the province of Canterbury. From 1283 to 1541 these continued, under the name of Gloucester College, to minister to the educational needs of the Canterbury Benedictines. The following, according to Antony Wood, were the abbeys which furnished students—Gloucester, Glastonbury, St. Albans, Tavistock, Burton, Chertsey, Coventry, Evesham, Eynsham, St. Edmondsbury, Winchcombe, Abbotsbury, Michelney, Malmesbury, Rochester, Norwich.

To a visitor, who enters on a winter's afternoon, when the sun is setting the great gate of Worcester, the small

cottage-like buildings, part of those erected for the accommodation of the students, present a singularly picturesque and beautiful appearance. They stand on the south side of the modern quadrangle, and they still are aptly described in A. Wood's words: "Divided (though all for the most part adjoining to each other) by particular roofs, partitions and various forms of structure, and known from each other, like so many colonies and tribes (though one at once inhabited by several abbies), by arms and rebuses that are depicted and cut in stone over each door." Beginning at the east, or the nearest side to the gate, over the door of the first set of lodgings is a "griffin sergeant"; over the next a plain cross; further on a shield bears three cups surmounted by a ducal coronet; while at the extreme west end, nearest to the garden gate, is another shield bearing a mitre over a comb and a tun with the letter W. This letter may be either the rebus of WALTER COMPTON, or it may refer to Winchcombe Abbey. The chambers in the centre of the five blocks of buildings were "partly for Ramsey and Winchcombe Abbays"; and those adjoining them on the west side have been traditionally assigned to Westminster Abbey. In the small quadrangle, where are the modern buttery and kitchen, is another plain shield.

On the north side, hidden now behind the chapel, is a similar group of buildings to that on the south side. The first of these was allotted to the monks of Abingdon; the second to the monks of Gloucester. Here now are the senior common-room, a lecture-room, and some small sets of undergraduates' rooms.

In 1420 a chapel was erected on the site occupied by the present chapel. Previous to this date, doubtless, the parish church was frequented by the students; but they possessed a license also for a portable altar. So far we find no mention of a refectory. A library, however, was added at the same date as the chapel by JOHN WHETHANSTAL, Abbot of St. Albans, on the south side of the chapel, and at right angles with it. The Abbot himself, and by his influence HUMPHREY, DUKE OF GLOUCESTER, contributed many books—now lost—to the newly formed library.

For a century the College continued in uneventful prosperity; but with the Dissolution of the Monasteries there came inevitably a break in the continuity of its history. The College passed into the hands of King HENRY, and in 1542 it became the residence of the first Bishop of Oxford—Bishop KING—who had been the last Abbot of Osney. In 1559 Queen ELIZABETH gave over the College to WILLIAM DODDINGTON. From him it passed to the College of St. John the Baptist. In 1604 the then Bishop of Oxford tried vainly to recover it; and "made an entry by night, and by water, and did drive away the horse depasturing on the land belonging to the said Hall."

By this time the College had become a Hall. In 1560, under the presidency of its first Principal, a Fellow of St. John's College, on St. John the Baptist's Day, a hundred scholars dined for the first time in the monks' refectory, erected some time during the previous century.

A hundred years later these scholars had sadly dwindled in numbers. In 1675 and the three following years there were no matriculations at all; the paths were "grown over with grass, and the way into the chapel and hall made up with boards."

A view taken by LOGAN in 1675 presents a sad picture of ruin and desolation; it bears the motto: "Quare fecit Dominus sic domui huic?" ("Why has God dealt thus with our house?")

An interesting episode in the history of the College was the introduction in 1698 of five young Greeks, brought over from Smyrna. The experiment of maintaining a Greek college did not, however, prove a success, and in the year 1705 was finally abandoned.

About that time Dr. WOODROFFE, the then Principal of Gloucester Hall, a man evidently of energy and determination, though somewhat unscrupulous, was in negotiation with Sir THOMAS COOKES, a Worcestershire baronet, who had expressed his desire to found or enlarge some Oxford college with the sum of 10,000*l.*

There was a good deal of competition for the prize. Balliol, St. Edmund Hall, Magdalen Hall—all hoped to secure it. At one period it looked as if the money would go to establish workhouses in Worcestershire. Dr. WOODROFFE died in 1711; and it was a Fellow of St. John's, Dr. RICHARD BLECHYNDEN, who ultimately became first provost of the newly-founded College.

In 1720 building began, the funds for this supplied out of the "remnant of a disputed bequest." In 1746 the library was completed; in 1784 the hall; the chapel in 1786 was still unfinished.

Dr. CLARKE, Fellow of All Souls', and member of the University, and Mrs. SARAH EATON, daughter of a former principal, had left benefactions—the one to endow six fellowships and three scholarships, the other seven fellowships and five scholarships to be held by sons of clergymen. These foundations were incorporated by charter in 1744. Between 1753 and 1759 Dr. CLARKE's trustees erected nine sets of rooms to lodge his foundation; in 1773 the remaining part of the north side of the quadrangle was demolished to make provision for twelve sets of rooms for Mrs. EATON's foundation. Simultaneously with these the present provost's lodgings were built.

Previously, in 1741 and 1744, the College had purchased from St. John's College the ground now forming the gardens and meadows to the south and north and west of the College. In 1801, by purchasing the "King's Head," then in front of the College, and clearing away "Woodroffe's Folly" in 1806, an open frontage was secured. About the year 1827 the then Bursar, Mr. CRESSWELL, laid out the gardens very much as they now appear. In 1820 Beaumont Street was opened up; before that time the College could only be approached by George Street, Stockwell Street, or Friars' Entry. In 1821 three additional sets of rooms were added; and in 1824 the roof of part of the old building was raised to make six new sets of rooms. In 1844 a new and commodious kitchen was built and seven additional sets of rooms constructed.

Such briefly is the history of the buildings as they now stand; their ornamentation and further details may be left for a second paper.

ILLUSTRATIONS.

OXFORD COLLEGE SERIES.—WORCESTER.

A HISTORICAL account of Worcester College appears above, and we this week present the first of our series of illustrations.

ORIGINAL SKETCHES BY THE LATE HERBERT RAILTON.

THE modus operandi of a great draughtsman has always a peculiar interest, and these sketches by Herbert Railton show the kind of preliminary studies that formed the personal memoranda from which he afterwards made finished drawings.

PUGIN STUDENTSHIP DRAWINGS.

THIS week we reproduce some of the drawings submitted for the Pugin Studentship this year by Mr. F. J. Lenton and Mr. S. Clough.

At a trustee meeting at Stenalees, it was decided to proceed with the erection of a Wesleyan Church and school at a cost of 3,300*l.*

SIR ROWAND ANDERSON recently examined the condition of the external stonework of the new portion of Dunfermline Abbey, and has informed the heritors that the cost of repair would probably be about 1,000*l.*

THE Dudley Education Committee have invited architects practising within eight miles of Dudley (including the area of the city of Birmingham) to send in their names as competing architects for a school to be erected at a cost of about 5,000*l.* A selection from the applicants is to be made to-day, the 28th inst.

THE ARCHITECTURAL ASSOCIATION.

N Ordinary General Meeting of the Association was held on Monday, April 24, at 18 Tufton Street, S.W., Mr. A. Keen, President, presided.

The President read the report of the scrutineers in connection with the election of officers for the session 1911-12, which stated that there were 311 voting papers, or a decrease of sixty-three in the number of those voting last year. Of these two were rejected as invalid. The voting had resulted in the following elections:—President, Mr. Gerald C. Horsley; vice-presidents, Messrs. W. Curtis Green and W. J. Upper; members of the Council, Messrs. C. C. Brewer, G. Leonard Elkington, C. Wontner Smith, A. T. Bolton, Percy May, Sir A. Brumwell Thomas, G. Lucas, P. W. Lovell, George Field, Stanley Hamp, and A. G. Horsnell; hon. treasurer, Mr. A. Keen; hon. editor of the Journal, Mr. P. de Lafontaine; librarian, Mr. W. H. Ward; hon. secretary, Mr. H. A. Hall.

The Chairman proposed a vote of thanks to the scrutineers, whose work he said had been long and arduous.

The motion was carried.

Mr. Gunn announced the sixth spring visit to the Town Planning and Modern House and Cottage Exhibition, Gidea Park, Squirrels Heath, Romford Garden Suburb, on May 6, by kind permission of the committee of the Town Planning and House and Cottage Exhibition, and the directors Gidea Park, Limited. Members will travel by the 3.30 P.M. train from Liverpool Street station, and are requested to obtain their own tickets at the booking office. Tea will be provided by the directors of Gidea Park, Limited.

The President proposed a hearty vote of thanks to Mr. H. Reville Montgomery for arranging the visit to the Building Trades Exhibition on the previous Saturday, and for his hospitality on that occasion, and this was carried.

A vote of thanks was also proposed by the Chairman to the visitors in the School of Design. He said that Messrs. Ambler, Hare, May and Dawber had been to the rooms from time to time to inspect the drawings, and they were under great obligation to them. The motion was carried unanimously.

The President announced that the Association's play could be given in the long gallery of the Royal Institute of British Architects on May 30 and 31 and June 1 and 2. They were under great obligation to the Royal Institute for allowing them the use of the gallery, and he hoped they could show their appreciation by turning up in good numbers.

Mr. Horsley moved a vote of thanks to the Chairman, Mr. A. Keen, and retiring members of the Council, Messrs. J. Dare Clapham, Allen Foxley, Edwin Gunn, F. Winton Newman, and Henry Tanner; and Mr. Wornum, librarian. He said it was his privilege to welcome Mr. Keen to the chair a year ago, and he then ventured to say he would be a very good president. He was sure they would agree that he was a good prophet on that occasion, and they were greatly indebted to him for all he had done.

The motion having been carried, the President briefly replied, and also asked the meeting to accord a vote of thanks to the Professional Press.

Professor Beresford Pite then read the following paper

Alberti and Bramante: Architecture a Profession or an Art in the Cinque-Cento?

A rough generalisation may describe Brunelleschi, the sculptor, of Florence, as the discoverer of the interest and value of ancient Roman buildings, from whose enthusiasm and ability the whole course of architectural progress received that new direction in the first quarter of the fifteenth century which we know as the Renaissance, and upon the yet unexpanded tide of which we are still floating down the stream of time. Similarly, a century later, we may summarise in Michelangelo's career the realisation of that unity of art—entirely unique executively in his single personality—which reveals that sculptor, painter, and architect alike fulfil one mission and serve one mistress, not three. This unity, whether a truth or a doctrine we must each feel for ourselves, has found some verbal re-expression in our own day, though but little concrete exemplification if we except the work of that rare genius, Alfred Stevens, whom it is well-nigh impossible to claim as the product of the Italian national school, as he was truly English. The archaeological impetus of Brunelleschi also can be easily recognised as reproduced in our own antiquarianism, as well as his struggles with the competition system, and the registered trades unionism of the master builders of Florence. These influences gradually

create that personality in connection with the monuments of the Early Renaissance that had been lacking in the great Gothic buildings, and we are conscious of fellow-feeling and sympathy with colleagues who thus become our professional forefathers. The building arts are becoming individualised, the general march of tradition is being arrested, something more than apprenticeship to the craft and mystery of masonry is entering into the practice. Architecture, in short, the shadow of the architect himself, is emerging from those of the forest, and with the greater movement of thought and the revelation of the past as an operative force upon the present, he magnetises in his person the numberless details which formerly grew or grasped themselves naturally, and compels them to an obedience which is according to the law of his own thought and ideal.

In the century between the completion of Brunelleschi's struggle with the guildsmen over the construction of the dome of St. Mary of the Flowers at Florence, and Michelangelo's crown of an heroic artist's career in St. Peter's at Rome, we may hope to find further illustrations of the development of our own type of architect, student, enthusiast, and practitioner, for we, too, may have monuments to erect—even though no larger than Bramante's miniature temple—without the assistance of active building tradition other than that of the almost hopeless artistic ideals of the modern stone or brick worker and his trade society.

Two Italian architects in this period will afford these illustrations, each greatly differing in circumstance, character, and achievement, but both contributing impulses which are familiar and potent to-day alike to students and practitioners. These two men are respectively aristocratic and plebeian, one having the advantages of birth, wealth, and education, the other of the converse disadvantages. They are but partly contemporary, so we will proceed chronologically, but before entering into detail will generalise that the first represents the influences of literature, and the second those of successful practice in the constant struggle to get work and carry it out well and promptly. But in both we find the light of a clear and sweet architectural result in graceful buildings and grand design.

The mid cinque-cento was dominated by one architectural writer, just as the mid-nineteenth has been, but more completely and ultimately. The earlier was the dead hand of Vitruvius, revived by the ten books of Leon Battista Alberti, and the other by the stones of Venice, temporarily illuminated by the seven lamps of John Ruskin. The architect in both centuries had learnt to read and to write, and as an inevitable consequence forsook the limitations of a workshop education for the fairy lands of antiquity with extraordinary and often impractical distension of his imaginative faculty—that is, of that part of his brain action which differentiates him and makes him a specialist.

The widening view of the Renaissance epoch seems to have developed, out of a narrow embryo, that receptivity of idea which imagines and ultimately thirsts for originality. Vitruvius was, then, a fresh spring; the apparently intellectual basis, the philosophical connections, and the historical and mythological allusions with which his book, entitled "Architecture," abounds, all offered relief from the bondage of the craftsmen's traditions, and the narrowness of the ecclesiastical limits of art. How strange that after some four centuries of freedom the mediæval narrowness should again flow with the ideal light of a golden age of revealed perfection to the imaginations of such Victorians as Pugin, Ruskin, Street, and, shall we add, Morris.

It is claimed, I think most uncertainly, by Swift, upon the ground of certain proportional systems, that Vitruvius was not unknown to mediæval architects, but his work was practically without effect until the break up of the Eastern Roman Empire, early in the cinque-cento, directed scholars to the wealth of literary tradition and manuscripts which it embodied. Professor Aitchison, in his Royal Academy lectures in 1905, describes the discovery of the manuscript of Vitruvius by Poggio in 1414. It was not printed till, it is supposed, 1486, at Rome, but the book is without date.

Three editions were published before the end of the century—Rome, 1486; Florence, 1496; and Venice, 1497. Fra Giocondo published his illustrated edition at Venice in 1511, rapidly followed by others. Within a century of its discovery twenty distinct editions were published, thirteen in Latin and seven in Italian, the first of the latter being in 1526.

Professor Aitchison says that all the civilised nations of Europe began in the sixteenth century to issue illustrated editions; and according to the Codex, Vitruvius's original

book was illustrated, but that has disappeared without leaving any trace.

Alberti absorbed Vitruvius, reincarnated him, gave currency in practical application to his orders; but in liberality architecture, from mediævalism, enslaved it to his new classicism, and you and I by it live and suffer, for Alberti practically rules us to-day with orders, and thereby substance for examination questions, diplomas, registration, and licences, as well as excommunications and threatened deprivation of any liberty to assume the title of architect. To imagine architecture delivered from the pedantry of commentators, proportionalists, systematising ordinance creators, and all the supposed education which arises thereupon, you have only to transpose yourself into that first half of the cinque-cento before Alberti wrote his ten books on building, and rejoice that where ignorance is bliss art gains affectation only by wisdom.

Leon Battista Alberti was born in 1404 at Venice, where his father, Lorenzo, was living in exile. The Alberti family was one of the noblest of the Florentine aristocracy, seeming to Machiavelli to be "rather princes than a private family." The democratic party at Florence was directed by the Alberti, the Ricci, and the Medici families; they were deprived of power and exiled by the rivals, the Albizzi, in 1381, who directed the affairs of the city for well-nigh half a century. This was the most prosperous epoch of the Republic, during which the Renaissance budded into flower, the period of Brunelleschi, Ghiberti, and Donatello. The Pope, Martin V., in 1424, directed the Florentine magistrates to recall Alberti. His successor, Eugenius IV., made Alberti's uncle a cardinal at the Council of Florence in 1440. The Albizzi men succeeded by the Medici, Cosimo dei Medici, born in 1389, managed to return to Florence in 1428, and having opulence and European reputation as the head of a great commercial establishment, used his wealth and influence to effect a personal political ascendancy. In 1434, the year when Brunelleschi's cupola closed over the central space of the Duomo, he exiled the Albizzi and recalled the party of his friends. The political ambitions of the Medici family and their great wealth were combined with literary and artistic culture. Their sumptuous palace in Florence was the centre of intellectual life, and the Platonic philosophy was studied, discussed, and applied in the discussions of the academy garden.

The Albertis were not a negligible factor even in their exile, a heavy price lying upon their heads until Cosimo dei Medici's action put an end to the threatened assassinations.

Leon Battista grew up, therefore, in a strange atmosphere to that of a modern architectural student, and without much experience or promise of the restful conditions sometimes deemed so necessary to artistic work. He was early put to study law at the celebrated University of Bologna, amidst much promise of extraordinary gifts and determined character. We are told that as a boy of fifteen he solaced himself during a severe operation on his foot with his cithara and singing, and conquered a natural disgust for onions by steady perseverance in fighting nausea. He joined the hatless brigade of his day, to accustom himself to variety of temperature, and of this the hair on his medallion portrait seems to offer evidence.

The self-control of the stoic, indifference to wealth, ignorance of fame, but with abounding impetuosity and vivacity of character, combine to make him a singularly fascinating character. Versatility scarcely describes a young man who magnetised vicious horses, was unsurpassed in wrestling, javelin-throwing, and running and jumping—with an almost fabulous certainty of aim—and a then remarkable zest for mountaineering. His skill in and love of music has been mentioned, but he was also a reputable painter, a medallist, and a sculptor, and possessed equally with a burning enthusiasm for scientific study, as then understood, a dominating love of classical literature. He used to say that books at times were as brilliant jewels or sweet flowers in the delights they gave him. And when he felt these raptures to be alternated with disgust he fled to sports, arms, and wild nature for relief.

He was gifted with a gentle temper and a conversational charm that was never commonplace. His friends and biographers are as enthusiastic about his person and gifts as those of Michel Angelo later were about his art. He was silent, with a tendency to solitariness, and of a thoughtful cast of countenance; his friends delighted in his quiet humour, and repeated his moral dicta.

He was as thoroughly bitten with antiquarian fever as any modern student, and he designed and executed by way of recreation an antique comedy, which for years was attributed

to Lepidus, the comic poet. In achieving execution as well as design, the literary Chatterton has the advantage over his architectural imitator, who cannot enlist the decaying teeth of time so imitatively. But Alberti's literary antiquarianism found a practical sphere in the study and emulation of Vitruvius, and the revivification of Roman architectural law, and practice thenceforward became a vital element in the progress of the Renaissance.

The study of ancient architectural principles proceeded through literature by Alberti as though buildings by Brunelleschi; truth tintured by distance and matured like wine in oblivion, rediscovered with the flavour of the essays of a bygone age, was at the service of the student. Alberti's great work, "*De Re Edificatoria*," which consists of ten books like Vitruvius's "*De Architectura*," was finished in 1452 but not printed till 1485, thirteen years after his death.

It is to be observed, therefore, that Alberti's work was printed and published a year before the first printed Vitruvius, both being in Latin. Alberti's book is thus the first printed embodiment of architecture as an art and science in a system, and it indeed as such remains effective to-day. He, a student, impartially thus created the architect as an entity entitled to honour, and he says in his preface:—

"Our ancestors have left us many and various arts tending to the pleasure and convenience of life, acquired with the greatest industry and diligence; which arts, though they all pretend, with a kind of emulation, to have in view the great end of being serviceable to mankind; yet we know that each of them in particular has something in it that seems to promise a distinct and separate fruit: some arts we follow for necessity, some we approve for their usefulness, and some we esteem because they lead us to the knowledge of things that are delightful. What these arts are it is not necessary for me to enumerate, for they are obvious. But if you take a view of the whole circle of arts you shall hardly find one but what, despising all others, regards and seeks only its own particular ends; or if you do meet with any of such a nature that you can in no wise do without it, and yet which brings along with it profit at the same time conjoined with pleasure and honour, you will, I believe, be convinced that architecture is not to be excluded from that number. For it is certain if you examine the matter carefully it is inexpressibly delightful and of the greatest service to mankind in all respects, both public and private; and in dignity not inferior to the most excellent. But before I proceed further it will not be improper to explain what he is that I allow to be an architect, for it is not a carpenter or a joiner that I thus rank with the greatest masters in other sciences, the manual operator being no more than an instrument to the architect. Him I call an architect who, by a sure and wonderful art and method, is able, both with thought and invention to devise and with execution to complete all those works which by means of the movement of great weights and the conjunction and amassment of bodies can with the greatest beauty be adapted to the uses of mankind; and to be able to do this he must have a thorough insight into the noblest and most curious sciences. Such must be the architect."

"The conclusion is, that for the service, security, honour and ornament of the public we are exceedingly obliged to the architect, to whom in time of leisure we are indebted for tranquility, pleasure, and health, in time of business for assistance and profit, and in both for security and dignity. Let us not therefore deny that he ought to be praised and esteemed, and to be allowed a place both for the wonderful and ravishing beauty of his works and for the necessity, serviceableness, and strength of the things which he has invented among the chief of those who have deserved honour and rewards from mankind."

Our nearly modern Gwilt describes this book as deserving careful perusal by everyone who studies for the purpose of practice. I would recommend, for the mere interest of it, a refreshing practical view of Renaissance building practice the perusal of the eighteenth century English edition by Giacomo Leone—the architect of Moor Park, Rickmansworth among other Georgian residences.

The first book deals with site, soil, and climate; the second with materials; the third with construction; the fourth with the civic politics of building; the fifth with palaces, castles, academies, and religious buildings; the sixth with architectural proportions and ornaments; the seventh with columns, pilasters, and ornaments; the eighth with roads, pyramids, tombs, cities, streets, and public buildings; the ninth continues this, and also deals with decorations by paintings and sculpture; and the tenth and last deals with water supply and the assistance that architecture affords to domestic economy.

Vasari tells us that at the time when Nicholas V. (Tomaso Sforza), who was the first energetic and great Pope of the Renaissance, had thrown the city of Rome into utter confusion "with his peculiar manner of building," Alberti lived, and on account of his position at once received the Pope's confidence. Bernardo Rossellino, of Florence, was at that time acting as the Pope's architect, and great schemes were in hand for an enormous Vatican palace, and for fortification at the castle of S. Angelo, and new streets.

The Pope appears to have adopted Alberti's suggestions to spare the ancient imperial monuments which were being ruthlessly dealt with, and Rossellino is stated by Vasari to have executed the advice given by Alberti. The association of these two men is interesting in view of the similarity between the design of the Piccolomini Palace at Piacenza by Rossellino, and the Rucellai Palace at Florence by Alberti. We shall note three novel treatments at least connected with Alberti's name, the originality of which, based upon classical knowledge, would indicate their source in the mind of a scholar such as Alberti rather than from the ideals of the sculptor, Bernardo Rossellino. The carrying out executively by an architect of the work would probably be the work of the latter, and ascription to him ensue.

These three new motives are—first, the employment upon the façade of superimposed orders, as in Roman work; second, recourse to Roman examples for pedimental treatment for a gable end; and, thirdly, the use of the order of a triumphal arch for an internal arcade. These three methods are employed successively at the Rucellai Palace, where the now traditional Florentine method of a great cornice, of the proportion of a mediæval machicolated parapet, is employed to crown the undivided height of the elevation, is abandoned, and the Roman tier of three superimposed orders delicately applied with regular and delicate rustications. A new idea for the purpose of applied architectural features to impart interest into a composition is first attempted here since mediæval methods ceased. It is obviously the idea of a close student of ancient Roman ideas and buildings, and with the discovery of Vitruvius only just behind us how interesting is this deliberate experiment with his doctrine!

The return in this example to the decorative application of the orders to the front of a building preceding the work of practical architects like Bramante and San Gallo—a dilettante student reveals itself characteristically as the imposition of a revolutionary factor in design by a powerful mind.

The second treatment which we identify with Alberti is that of a pedimental treatment, for the gable elevation has special interest in its first employment at Rimini. This small city lies on the Adriatic between Ancona and Ravenna, and, like them, breathes the atmosphere given by Imperial Roman monuments. The triumphal arch, erected to honour Augustus still remains at the beginning of the Flaminian Way, rivalling the later and more showy one of Trajan at Ancona.

From this Augustan arch Alberti derived the direct motive for the façade of the Cathedral Church of St. Francis, which he clothed in a complete Roman garb.

The ideal is manifestly the re-creation of the forms of the Imperial past; the treatment of the flanks with arched recesses for external sarcophagi is as pedantic as those beneath the caryatid vestry porticoes of St. Pancras Church in the London Road.

The corpus of the church is mediæval, and the pointed arches and vaults remain of the chapels of the wide basilican nave. The front, however, frankly neglects all this, and the independent treatment of gable end with a screen was customary to Italian Gothic builders. The entire detachment of idea and originality of style manifested by Alberti here sets him again apart from all the traditional methods, his idea springing directly from the Roman monument of the town. The attached order, the wider arches, the roundels, the continuous base, the detached impost to the enclosed arches are faithful to their arch type; while the gracefulness of the proportions and the ease with which the order attaches itself to the front are instances of sound architectural judgment. The superimposition of a second order tentatively completes the composition. The side elevation is as great simplicity and power. The entire freshness of such design in the middle of the fifteenth century must be borne in mind; there was nothing up to this point comparable for breadth and dignity with this composition. Brunelleschi and Michelozzo are each characterised by great but different qualities from this work. We can trace the measures by which they advance, and as the cortiles of the Pazzi Chapel and Certosa at Florence by Brunelleschi and

of the Palazzo Vecchio by Michelozzo are to all that had gone before in their delicate graciousness, so is this next and immediately subsequent flanking arcade, with its now entirely Roman sense of power. There is withal place for the current Florentine refinement of decorative carving in the beautifully-detailed enrichments.

The interior of the church is a curiously fascinating medley, illustrating perhaps how the mind that has become dependent on antique precedents fails in adaptability to peculiar conditions. But the problem seems simply to have been to enrich with inscriptions and luscious emblems the interior of the church, which was practically a family temple rather than a Christian cathedral. The internal sculpture has provided modern critics with much interesting discussion, as Vasari is absurdly incorrect in citing Ghiberti, who was in Rimini fifty years before; Donatello's brother, who never existed; and Luca della Robbia, in 1414, as taking part in the work, which was begun in 1446 and completed in 1450. M. Yriarte probably is correct in showing that Matteo de' Pasti and the celebrated Agostino d'Antonio di Duccio were responsible respectively for distributing the decoration and executing most of the sculpture.

We may agree, too, with M. Eug. Müntz in refusing to credit Alberti with the confused effect of the interior; but in any case the problem was a difficult one, and the employer, Sigismondo Pandolfo Malatesta, certainly the most extraordinary of clients.

Mr. Addington Symonds's sketch of him is broad and fascinating. He says: "No one with any tincture of literary knowledge is ignorant of the fame, at least, of the great Malatesta family—the house of Wrongheads, as they were rightly called by some prevision of their future part in Lombard history. So far as Rimini is concerned, the house of Malatesta culminated in Sigismondo Pandolfo, son of Gian Galeazzo Visconti, known as the perfidious Pandolfo. It was he who built the Rocca, or castle for the despots, which stands a little way outside the town, and who remodelled the Cathedral of S. Francis on a plan suggested by the greatest genius of the age. S. P. Malatesta was one of the strangest products of the earlier Renaissance. To enumerate the crimes which he committed within the sphere of his own family, mysterious and inhuman outrages which render the tale of the Cenci credible, would violate the decencies of literature. Dissolute, treacherous, and inhuman as he was, the tyrant of Rimini always encouraged literature, and delighted in the society of artists. He who would brook no contradiction from a prince or a soldier allowed the pedantic scholars of the sixteenth century to dictate to him in matters of taste, and sat with exemplary humility at the feet of Latinists like Porcellio, Basinio, and Trebanio. Valturio, the engineer, and Alberti, the architect, were his familiar friends, and the best hours of his life were spent in conversation with these men. It is here that all the Malatesti lie. Here, too, is the chapel consecrated to Isotta, 'Divæ Isottæ Sacrum,' and the tombs of the Malatesta ladies, 'Malatestorum domus heroidum sepulchrum,' and Sigismondo's own grave, with the cuckold's horns and scornful epitaph. Nothing but the fact that the church is duly dedicated to S. Francis, and that its outer shell of classic marble encases an old Gothic edifice, remains to remind us that it is a Christian place of worship. It has no sanctity, no spirit of piety. The pride of the tyrant, whose legend occupies every arch and string-course of the architecture, and whose coat of arms and portrait in medallion, with his cypher and his emblems of an elephant and a rose, are wrought in every piece of sculptured work throughout the building, seems so to fill this house of prayer that there is no room left for God.

"Yet the Cathedral of Rimini remains a monument of first-rate importance for all students who seek to penetrate the revived paganism of the fifteenth century."

The façades of two churches of importance also remain to illustrate the application of the pediment motive by Alberti, namely, Sta Maria Novella at Florence, and Sant Andrea at Mantua. Though very different from one another, as from Rimini, the elements of the arrangement are similar. The struggle with the aisle roofs below the clerestory have caused the introduction of the curved truss-like wings at Sta Maria Novella, the façade of which was erected by Alberti's friends, the Rucellai, in 1470. There is no great departure here from the usual type as seen at S. Miniato, but gently the whole mediæval scheme is brought into classical character by an element of harmonious proportion introduced by the applied orders; the absence of such designed proportions is obvious in the mere arrangement in the earlier system of marble penellings.

But the façade of Sant Andrea at Mantua presents another classical scheme. An enclosed portico is erected in front of the great body of the church, and treated by a combination of Florentine and Roman motives. The central arch resembles the accepted early Renaissance type of Brunelleschi. A following example is the sanctuary from Sta Chiara, Florence, at South Kensington, by Cronaca. The front of the Pazzi Chapel shows how originality was desiderated, but the scheme of entablature, pilasters, and intermediate stones with a great pediment, free of the main roof slope, which rises beyond and behind, is a definite composition of classic features employed as in a Roman triumphal arch with studied proportions and arrangement. If the result appears somewhat commonplace to us, it could not have been so when it stood as the pioneer of the method afterwards hackneyed by Palladio. The interior of this great church at Mantua affords us the typical example of the third classic motive which Alberti introduced into Renaissance architecture by employing the arch enclosed by an order for the internal arcades. Brunelleschi's very beautiful and picturesque treatment of St. Lorenzo and St. Spirito at Florence merely employs the columns and returned entablature below the arch; the wall is free above from vertical emphasis. The main pilasters at the crossing and at the terminations of external loggias seemed to be difficult to him, and no simple prescription seemed at hand to help. Alberti's plan is masterly in its simplicity, and the key obviously is the pair of pilasters to each arch, which space out the bays and give strength and simplicity to the lines of the plan. There is a naturalness about the supports of the dome at the crossing produced by this system that is quite masterly. The internal elevation of the nave is entirely simple in scheme, though it is covered with the overrich ornament of the epoch. The simplification of the treatment around the apse is equally natural and facile. The simply-coffered vault brought right down on to the main cornice is very fine in effect. It proved convincing enough, for St. Peter's is this and little more, except greatly increased scale. The simple apse, the complete form of the pendentives, and the simple large panels of the piers and spandrels seem more to be the results of a long-developed style than the innovations of a dilettante student. If we afterwards contemplate the movement imparted by Bramante or Michel Angelo we must expect little to compare for direct power and practical usefulness than this system, at St. Andrea exhibited in proportions which have not lost their vigour and charm, and with a refinement which seems to echo the great character of Alberti.

Donato Bramante da Urbino, or Donato Lazzari called Bramante (Bramante means desiring), was born, according to Geymüller, who thought that he had identified the family house, in a small house outside Fermignano, near Urbino, the birth town of Raphael, in the year 1444, exactly forty years after Alberti. There are no reliable particulars of his early life, but we know the famous ducal palace at Urbino, the architect of which, Luciano da Lovrana, evidently exercised a considerable influence over his style, as possibly did Alberti also, before whose death, when Bramante was twenty-eight, he had worked under Andrea Mantegna at Mantua while St. Andrea was building.

For the ensuing quarter of a century Bramante practised at Milan, gaining reputation by the erection of the peculiarly-planned church of San Satiro, consisting of a transept and a nave, with a chancel built in perspective upon a flat wall—a curious exercise of talent in that newly-discovered and much-practised and valued art. Let us moralise upon the persistence of the perspective draughtsmen since then, and of his highly respectable antecedents. Perspective offers just that flavour of practical science in combination with artistic effect that in light and air cases optics and angles do with brigandage—enough to render the mixture attractive. Bramante practised perspective nobly, providing careful designs for the architectural backgrounds of his accomplished young friend and fellow-townsmen Raphael. Sanzio's frescoes in the Vatican later on, when honour and distinguished patronage were not lacking.

The queer chancel of San Satiro is a *tour de force*, and, one might almost confess, worth the effort. The principal achievement, however, is the octagonal sacristy with a polygonal cupola. This building is small and complete, and illustrates some interesting developments of domical design, upon which we cannot stay to dwell. It evidences, however, that Bramante had studied well the work of his contemporaries, the great Giuliano da Sangallo and his garrulous confrère, Simone Pollajuolo, at Florence, and had sought to improve upon their treatment of the pilasters of the internal angles of the octagonal. The building has a

beautifully-modelled frieze by Caradossa of terra-cotta. Geymüller has recounted with great industry of research various works at Milan which can be imputed to Bramante during his long residence of about twenty-eight years in city; these researches are easily accessible to us, as they embodied in his paper in the *R.I.B.A. Transactions* for 1898. The comparatively recent death of Baron Heinrich von Geymüller is a great loss to all students of Renaissance architecture.

The remarkable front of the church of Abbiate Grasso near Milan is an inspiring experimental design of great boldness; it seems to have an element of pure adventure about it, and to be taking obvious risks successfully. It illustrates Bramante's earnest and constant adoption of Alberti's Romanism of the superimposed orders, and the great arched recess remained in his mind as a motive to again experiment with when the opportunity offered. That he made for himself courageously many years after in the great open-air apse of the Belvedere of the Vatican. It is a respect element in St. Andrea at Mantua which provoked the venture. There is always, perhaps, an element of wonder risk in an arch which increased almost disproportionately with its size. How the arches of great bridges really excite us! Waterloo does the Thames in seven, London Bridge five, the new St. Paul's is to be three, and the day may come when we shall do it in one! Bramante's cupolas and domes grew similarly in his hand and mind with both purity and power. Sta Maria delle Grazie, the picturesque terra-cotta melange of whose exterior is so well known to us, is a brisk development of Bramante's power of drawing beautifully delicate details. There is no attempt to classicise the exterior; the external walls are panelled out in search of proportion and enriched. There is probability in the conclusion that the upper parts were not executed by Bramante as they evidence a relapse to earlier methods, as a comparison with the exterior of the San Satiro group shows.

There are interesting evidences of Bramante's hand in Como Cathedral; a comparison of his south door with Rodari's northern one very instructively reveals the work of a broader mind and stronger sense of design. The ornamental genius of the early Florentine Renaissance did not become coarse in a hurry, but had a tendency, in spite of its drawing, to tire the eye with the wealth of its delicate enrichment. The Certosa at Pavia is the culmination erected just at this time of the era of the ornamentalists. Geymüller's suggestion that the treatment of the walls of the nave of Como Cathedral, and possibly the pinnacles to the buttresses, may be by Bramante does not seem unlikely. We do not realise that he was always dependent upon the northern Roman methods, but enjoyed what we may call that local freedom which so often characterises the provincial office.

Though it was not until the fall of Ludovico Sforza, called the Moor, the Duke of Milan, in 1500 that Bramante settled in Rome, it seems that he was there in 1495, and Vasari mentions a commission to paint the arms of the Borgias for Alexander VI., now destroyed, over the holy door of the Lateran Church before the beginning of the holy year 1500. Geymüller states that he was first engaged upon a commission for the Cardinal Riario in building the magnificent palace known now as the Cancelleria. This great palace entirely designed in the scholarly manner of Alberti, with an air of Florentine dignity and refinement that one feels instinctively to be gentlemanly. The quietness of the details has occasioned doubt as to whether the authorship is consistent with what we know of Bramante's other work, but he was now in high repute, about the age of fifty, the centre of a group of able and active artists, with abundance of commissions.

In 1502 he is engaged upon the cloister of San Pietro in Montorio, a small sort of rival to the greater basilica not far off. Here he planned with fine imagination a great circular cloister surrounding a small circular temple over the sacred central spot. This tempietto alone was built, but even in its solitariness, without its harmonious circumference, is a work of singular grace and charm. The purity of the forms and delicate adjustment of the proportions make this simple exercise in peristylar design almost as fascinating as a Greek temple. It appears so natural in its absolute completeness and one marvels that such simple and relatively small work have not achieved similar success again and again, but this indeed, has not been so. Like St. Stephen's, Walbrook, it is sufficient, if properly estimated, to secure the reputation of its architect apart from claims of other greater and later work.

The evidence of a new and careful scholarship in this work is important to note in a man well advanced in

iddle life, and Vasari, probably somewhat poetically, says
t "he had brought some money with him from Lombardy
al had gained other sums in Rome by certain works which
had executed there; these funds he husbanded with care,
ending them with extreme frugality, because he desired
live for a time on his means, and not to be distracted by
er occupations from the labours which he proposed to
dertake among the ancient buildings of Rome, all of
ich he was anxious to study, wishing to obtain accurate
asurements of them, entirely at his leisure."
(To be continued.)

ILLUMINATING ENGINEERING SOCIETY.

MEETING of the above Society was held on Monday,
the 24th inst., at the premises of the Royal Society
Arts. Papers by Mr. Haydn T. Harrison, M.I.E.E., and
r. P. J. Waldram were read. Mr. Harrison's paper on
The Ratio of Light to Illumination" was as follows:—

Only within the last few years has artificial illumination
en dealt with as a separate science; therefore it is not
prising that some of the terms connected with it are often
ed with different meanings, thus leading to confusion.

The very title of this paper would confuse many who are
the habit of looking upon light and illumination as the
me thing; but I prefer to treat the definition of light as
at which causes illumination, whether that illumination is
sible or not.

I agree, for instance, with Mr. Trotter's definition of
llumination as depending simply on the quantity of light
lling upon a surface, and that it has nothing to do with
e colour or reflecting value of that surface. Therefore, it
ould be, strictly speaking, inaccurate to state that an instru-
ment (such as the Holophane Lumeter used by Mr. Waldram
or the valuable tests of which the results will be put before us
y him to-night) indicated the illumination except when it
as pointed at a white screen of similar material to the screen
n the instrument itself, and which is illuminated to a pre-
etermined degree.

In order to demonstrate my point I carried out the follow-
ng experiments with my "Universal" photometer as made
y Elliott Bros. As you are aware, this instrument consists
f a screen capable of angular displacement, thus varying
he degree to which it is illuminated by a standard lamp.
his screen in used in conjunction with the Whitman sector
licker disc, and thus indicates the degree of illumination
derived from a source of which the candle-power value can
be calculated. The advantage of using this instrument was
hat, by replacing the standard comparison screen by the
various tinted wall-papers which Mr. Waldram used in his
experiments, I could ascertain very accurately the increased
illumination necessary in order that the rays reflected from
such wall-papers should have the same effect on the eye as
when a white paper of similar surface to the photometer
screen was used.

As the results of my experiment may be interesting I
give them below:

Screen No.	Colour.	Increased Illumination Necessary.
1	Bright red	3.5 times
2	Dull cardinal red	6.5 "
3	Medium blue	4.8 "
4	Light blue	3.2 "
5	Dark green	7.0 "
6	Light green	2.2 "

Another interesting point that these tests proved was that
the angle of incidence of the light rays closely followed
the cosine law over the greater part of the angular movement,
despite the fact that the surface of these wall-papers was far
from a plain one.

My next experiment was to ascertain the value of the
light reflected from the area of these papers compared with
that of white blotting paper, and I found that, though these
tests were made under very different conditions and very
roughly, owing to the short time available, they to all intents
and purposes corroborated the figures given above, thus
proving that an instrument of the Holophane Lumeter class
measures correctly the irregular reflecting value of a surface.

Mr. Dow and Mr. Mackinney, when describing their
"Holophane Lumeter" instrument in the *Illuminating En-
gineer* (May, 1910), stated that it could be used to measure
either intrinsic brilliancy expressed in terms of candles per
square centimetre, or illumination expressed as Lux or foot-
candles "which a truly white surface would have to receive
in order to have an equivalent brightness."

This description is quite correct, except that it might be
taken to mean that the instrument indicates either intrinsic
brilliancy or foot-candles, thus making it appear that they

were one and the same thing. This, of course, is not so,
therefore it must be clearly understood that it only measures
foot-candles when a special screen is used.

It is interesting to note here a remark of Mr. Trotter's,
viz.: "Such terms as illumination, brilliancy, brightness,
intensity, and luminosity are generally employed by different
writers to express different ideas, and are often used in a
confused, vague way." This, unfortunately, is as true to-day
as when it was written, therefore it is not surprising that it
is difficult to fix definitely a unit which accurately describes
reflecting value, and I doubt whether a better word than
"Luminosity" could be chosen. Sir William Abney de-
scribes luminosity as brightness resulting from illumination,
which is exactly what the Holophane Lumeter measures.
But in this case are we to regard "luminosity" as denoting
luminous flux per unit area, so that it would be expressed,
say, in lumens per square inch? Or as denoting C.P. per
unit of area?

With regard to the other terms, personally I use them in
the following sense:—

1. *Light*.—The emanations from a light source.
2. *Illumination*.—The extent to which anything is illu-
minated; foot-candles.
3. *Brilliancy*.—Refers to primary light source and is
candle-power divided by area.
4. *Intrinsic Brilliancy*.—Candle-power per unit surface
(square centimetre).
5. *Brightness and Intrinsic Brightness*.—Same as
brilliancy.
6. *Luminosity or Luminous Intensity*.—Same as bril-
liancy, but applied to secondary sources of light.

I only put the above table forward as suggestive, and
would like to see the terms "brilliancy" and "brightness"
always applied to primary light sources, as considerable con-
fusion, which is now caused by their indiscriminate use,
would be obviated.

For example, many people talk about a bright light, and
this under the above classification would be correct; but for
an artist to talk about a bright colour would be incorrect.
But, on the other hand, an artist and a colourman think on
different planes: a colour is bright to an artist under one
condition, and dull under another; whereas to a draper or
a colourman a colour is *ipso facto* a colour describing some-
thing when viewed under normal light, and he would not
grant that the colour is changed when viewed under an
abnormal light, but that the light is changed. Therefore,
the luminosity is changed, whereas illumination is not
changed by the fact that it falls and is reflected to the eye
in a varying degree dependent on its colour.

If luminosity or luminous intensity is used as applied to
indirect or secondary sources of light, the value of these
sources could be stated in lumens instead of candle-power,
which would simplify matters considerably. For example, if
we could state that any given area in a room was illuminated
to a certain degree in foot-candles by direct light from a
source plus so many lumens in the form of indirect illumina-
ation, we should know at once the relative reflecting value of
the surroundings of the light source, and also the likely
density of the shadows. This would not be a difficult thing
to measure, as, by shading the direct light from the measur-
ing surface, we get the illumination due to the lumens (in-
direct lighting) only.

Louis Bell points out that altering the position of the
primary source of light in a room does not affect the illumina-
ation seriously if the walls and ceiling diffuse strongly (*i.e.*,
have a high degree of luminosity), while, if they are dark,
the change is decidedly unfavourable. I will go further than
this, and say that if the walls and ceiling have a 100 per
cent. luminous efficiency and the light, though invisible, is
placed so as to illuminate them, the resulting illumination
will have a maximum efficiency. On the other hand, if the
walls and ceiling have no luminous efficiency, and no direct
illumination is derived from the source of light, the illumina-
ation will be zero. The various stages between these two limits
will be inversely proportionate to a table similar to that
given in the early part of this paper. If this theory is
correct, the illumination at any part of the room will be pro-
portionate to the direct illumination plus the illumination
due to light reflected from the surfaces visible from the point
of measurement.

The measurement of the illumination derived from all
sources is, of course, an easy matter, such instruments as
the Trotter photometer, Holophane Lumeter, with subsidiary
screen, and several others, being available for the purpose;
but to ascertain the light value of the original source of such
illumination is a very different thing.

The importance of ascertaining this light value arises

MODERN EUROPEAN ARCHITECTURE.
AUSTRIA.

A SUBURBAN HOUSE IN VIENNA.—Herr OTTO A. GIELOW, Architect.

[From *Der Architekt*.]

when a question of cost and efficiency is under consideration, and the only satisfactory method is either to eliminate all reflecting sources or to remove the lamps to the test-room. In either case the question presents itself as to what is the light source—is it the lamp only, or the lamp plus the globes and reflectors, which may considerably enhance its value as an illuminating agent?

It must be borne in mind that globes and reflectors only enhance the lamp's value as a light source for the purpose of giving direct illumination, and often depreciate its value from the point of view of the reflected illumination derived from the surrounding objects. Therefore, the value of the naked lamp alone must be known, and this is, of course, easy to ascertain by the usual photometric methods. The value of such a lamp plus globes or reflectors is a more complicated matter, owing to the area of the light source being increased, and thus interfering with the square law of photometry. Under these circumstances, unless means are available for obtaining the profile curve of lighting, the only way to ascertain the illuminating value of a light source, including reflector, &c., is by ascertaining the illuminating results.

For this reason I would suggest that all makers of lamps who wish the apparatus supplied by them to be used to the best advantage should accurately state the candle-power derived at various angles, and should not be content with stating either the maximum, horizontal, or mean spherical or hemispherical candle-power. If makers would do this, the lamps or combinations of lamps with globes and reflectors would be divided into classes, which would not only greatly assist illuminating engineers, but would result in the goods supplied being used to the satisfaction of the public.

This naturally leads to the consideration of the relative merits of lights with reflectors or globes which increase the illumination in the direction required, versus unprotected lights from which good illumination is obtained by using the walls or ceiling as reflectors.

It is obvious that as regards efficiency the use of reflectors will generally have the advantage. Take, for example, a room with white ceiling and walls. The upper hemispherical rays are reflected back into the room and usefully increase the illumination, but, on the other hand, a reflector placed directly over the lamp, provided it receives all the upper

hemispherical rays, will even more efficiently direct them on to the remainder of the room where illumination is required, but will leave the upper part of the room in comparative darkness. In the case of a room which has not a white ceiling and wall-paper the efficiency of a reflector will be comparatively higher, and, what is even more important, will remain constant owing to the fact that it can be cleaned more often than it is convenient to whitewash the ceiling and walls of a room. But the physiological (light sensation) effect is different, because the illumination is derived from a single source, while in the other case it emanates from all directions.

I am prepared to grant that a person entering a room with light coloured ceiling and walls will often state that it is better illuminated than a similar room where the surroundings are dark coloured. Nevertheless, the illumination in the latter case may be better than in the former, and possibly the physiological effect would eventually prove more generally satisfactory as the high luminosity of the surroundings would tend to close the iris, thus producing a trying effect on the optic nerve if an attempt to work is made under those conditions.

This is where the province of an illuminating engineer becomes very similar to that of a physician. The latter cannot always tell the effect of the drugs he prescribes on various people, and often has to use the trial and error method; so the illuminating engineer will have to learn the effects which are most likely to please his clients.

For example, very few men would like to work in a study or dine in a dining-room where the light emanates from all directions and where the iris of the eye is kept constantly contracted by the high luminosity of the surroundings. On the other hand, many of the opposite sex would prefer it, owing, I fancy, to their desire to exhibit themselves and their costumes. Nature, however, tones down the luminosity of surroundings as the brilliancy of the sunlight increases, by providing them with a covering of green which is restful to the eye.

Artists have learnt that in order to depict the high illumination they must have strong contrasts, such as the deep shadows provided by nature, and I think in this respect they teach illuminating engineers a lesson. Shadowless illumina-

MODERN EUROPEAN ARCHITECTURE.
AUSTRIA.

A SUBURBAN HOUSE IN VIENNA.—Herren LINDNER & WINKLER, Architects.

[From *Der Architekt*.]

tion is always depressing, just as a day when the sun is obscured by clouds is depressing; and I think it would be wise to deliberate carefully before any system of shadowless illumination is adopted, and to remember that the object of all illumination is to produce an effect by which the outline of objects is easily seen, which result is greatly assisted by the effect of light and shade.

In conclusion, I must apologise if this paper is not what the title and synopsis in your Journal led you to suppose it would be. I am afraid it comes to little more than the stringing together of a few matters that interest us all. Nevertheless, if it provides food for thought and eventually results in some of the ambiguities I have touched upon being cleared up either by subsequent papers or discussions, I am sure you will forgive me for having placed before you these few remarks, not on the score of their merit, but on account of what they may produce.

a vaulted recess, and the opening in the wall through which the beam was pushed to strengthen the gates when the portcullis (the first line of defence) was captured. The interior of the rooms in the firelight, with the fires in the braziers reflecting on the old stone walls, appeals strongly to the imagination, and has quite an old-world look, and Mr. Jackson is to be congratulated upon the careful manner in which he has carried out the alterations, retaining everything of an antiquarian interest.

The Roman and ancient British objects found at Margidunum on the Fosse Road, near Bingham, were described by Mr. Wallis. Everything discovered is now being carefully examined and catalogued by Dr. Oswald and a small committee. Attention was drawn to the similarity of design of various objects, such as pottery, ornaments, and even the pattern of horse-shoe nails, with those found in Rome, proving conclusively that Margidunum was one of the important Roman military stations between Leicester and Newark.

The party then inspected the exhibition of water-colours lent by the Birmingham Art Gallery, more particularly the architectural subjects by Mr. T. M. Rook. These are unique as records alone, and from an artistic point of view are very beautiful. The amount of detail shown, the quality and texture of the colouring are remarkable, and the extraordinarily delicate lighting and brightness of the pictures cannot but impress everyone who sees them.

Mr. Bromley on behalf of those present tendered the thanks of the Society to Mr. Ball and Mr. Wallis for arranging the visit and for the interesting information they had given.

OUR CONTEMPORARIES FROM OVERSEAS.

THE *American Architect* (New York) has illustrated some buildings at Minneapolis by Messrs. Hewitt & Brown, viz., St. Mark's Church, a quasi-Perpendicular design; the Thomas Memorial Hospital for Consumptives, whose planning is quite opposed to English ideas; and Christ Church Parish House. We have also examples of the work of Messrs. Rankin, Kellogg & Crane, distinctly influenced by modern French design. A special country and suburban house number is an excellent exposition of the high character of modern

NOTTINGHAM ARCHITECTURAL SOCIETY.

ON the invitation of Mr. F. Ball, the Chairman of the Castle Museum Committee, and Mr. G. H. Wallis, the curator, the Nottingham Architectural Society visited the Castle on Friday evening, April 7. The party numbered 16, and included Messrs. A. N. Bromley, F.R.I.B.A., H. G. Watkins, A.R.I.B.A., S. G. Walker, and the Hon. Sec., Mr. F. M. Royle.

Mr. Ball and Mr. Wallis received the visitors at the entrance gateway, and showed them the interiors of the rooms in the bastions, which have been restored under the direction of Mr. T. G. Jackson, the well-known architect.

Mr. Wallis informed the party that the whole of the interior of the old rooms previous to restoration were lined with modern brickwork. This had been removed and the stonework of the earliest gateway—some of it dating back to the thirteenth and fourteenth centuries—had been exposed. It is interesting to see that some of the blocks have been formed from the rock upon which the Castle itself stands. The room on the right-hand side (till recently occupied as a residence) contains some interesting features. The private doorway from the Castle grounds has been discovered, also

domestic architecture in America, showing a remarkable variety of treatment from the purely picturesque to the sumptuously stately.

La Construction Moderne (Paris) reproduces some designs of Mr. Maxwell Ayrton, which were exhibited last year at the Salon. Other illustrations are devoted to the first and second successful competitors for the Rougevin prize, Mons. Haffner and Mons. Dupré. There is also a private house of reinforced concrete in the Rue Boileau, Paris, which is rather fearsome.

Moderne Bauformen (Stuttgart) is this month largely devoted to the work of Albert Gessner, of Charlottenburg, including some of his studies in town-planning. Some of Herr Gessner's interiors are very charming. Several examples of interior design by Professor Otto Prutscher, of Vienna, are also illustrated.

Stone (New York) illustrates the Chautauqua County Bank, Jamestown, New York, a refined piece of design with French feeling. The failure of a reinforced concrete building in Cleveland is described with the report of the Commission on the causes of the collapse, which caused the death of eight persons. As frequently happens, the design was all right, but the execution all wrong. Another failure in New York City is mentioned, which during the past month killed four workmen.

Engineering Record (New York) contains an excellent and learned paper on the design of reinforced concrete chimneys by Mr. E. Parry, B.S., A.M.I.C.E., M.I.E.E., of London, England. An illustrated description is given of the self-supporting marble stairs at the New York Public Library.



[The Editor will not be responsible for the opinions expressed by Correspondents.]

Registration of Architects.

SIR,—In your note *re* Registration in your issue of April 14 you say: "Of course, those *soi-disant* 'architects' who unite with their artistic efforts the more lucrative callings of auctioneers and undertakers need not trouble to apply." Why not? The Council have already, to my own knowledge, admitted to the Licentiate'ship a Government Clerk of Works (by trade a painter), and another (whose trade I do not know) has been nominated—if not, by this time, admitted—his papers being signed by Associates who, being engaged in the same Government department as himself, must be perfectly aware that he is *not* an architect. If such as these (very estimable men, no doubt, but without any claim to be regarded as architects) are to be admitted, why discourage auctioneers, or even undertakers?

The Council are, naturally, anxious to get as much support as possible for their Bill, therefore cannot be expected to inquire too curiously into the evidence of qualification, but it does not argue well for their cause if, in order to pass a Registration Bill, they have first to obtain the support of the very class which it is the object of that Bill to exclude from practice in the architectural profession. Let them only carry this policy far enough, and the need for the Bill ceases to exist, when the unqualified practitioners are all brought within the charmed circle, including the gentleman who, not content with combining the practice of architecture with the business of undertaker, added that of "coal merchant."

I have passed the Intermediate Examination, but feel no encouragement to proceed with the "Final" to qualify for the Associateship, and I know others who feel as I do—disgusted, after the time and money spent.

I enclose my card, but would subscribe myself

A HUMBLE MEMBER OF A NOBLE (!) PROFESSION.

Lightning Conductors at St. Paul's and Westminster Abbey.

SIR,—In *The Architect* of February 12, 1909, you drew attention to fire risks. I now write on the question of possible injury to these national buildings if they were struck by lightning.

The conductors at St. Paul's Cathedral were rearranged according to my specification in 1898, and inspected by me each year until 1909, when I reported that certain repairs were required, and advised an examination of those joints

which were inaccessible without special scaffolding was erected; as my report was not acted on I resigned my appointment as consulting engineer for this work last year.

Westminster Abbey was fitted with a somewhat similar system in 1901, but the conductors on one of the towers, which my predecessors had some years ago reported on as insufficient, were not altered, although I believe it was the intention of the surveyor, the late Mr. Micklethwaite, to have the work completed, and I believe they still remain in an unsatisfactory condition.

My object in bringing this into notice is to draw attention to the fact that even a modern system of lightning conductors, such as are installed in both these buildings, cannot be relied on without it is kept in order, and the shelving by the authorities of the recommendations of their consulting engineer, whose name would probably be quoted should any damage occur, is an unwise policy. Structural repairs are always in progress, and workmen are apt to treat the small cables which extend over the roofs with little consideration; for instance, after the last Coronation I found at the Abbey that one of the down conductors had been cut, possibly because it was in the way of some scaffolding; and I remember another case at the Guildhall, where the two principal down conductors were actually removed by the workmen who erected a temporary room for some city function.

In conclusion, I should like to refer architects and others to the Phoenix Fire Office rules for the erection of lightning conductors, which were drawn up in 1910 by Sir Oliver Lodge and myself after consultation with the electrical adviser to the company. Rule 6: "A test and examination of earth connections should be made once annually by a competent expert."

KILLINGWORTH HEDGES, M.Inst.C.E.

Hon. Secretary to the Lightning Research Committee (1905 Report).

10 Cranley Place, South Kensington: April 22, 1911.

Licentiate'ship R.I.B.A.

SIR,—Now that this season guinea-sale of the Royal Institute of British Architects is over, please allow me a little space to express the disappointment of the Indians in obtaining a Licentiate'ship, if not a Fellowship, to be less ambitious, in spite of the encouraging clauses of the Royal Charter. So far as we can see not a single Indian has been enrolled as a Licentiate, even though Indians as a class have been considered to be not very far behind the times in the matter of architecture.

My application for Licentiate'ship has been most awkwardly handled by the authorities concerned, and I am collecting information as regards similar unfortunate cases, for placing them before the public and the Fellows of the Institute through the medium of your valuable Journal if you could kindly allow me the privilege of a little more space next time.

AN INDIAN.

Madras: March 6, 1911.

[Our correspondent has been a little too hasty. The latest list of Licentiates elected contains the names of some of his compatriots, showing that if properly accredited native-born Indians are elected as readily as anyone else.—ED.]

Surveying for Dilapidations.

SIR,—It would be of some interest to reventilate the following problem, which, in solution, may admit of varying interpretations. My own view is that the lessor's surveyor can only estimate a sum for clearance of such items, as against a late lessee:—

In surveying for dilapidations, it is necessary to discriminate between removable and irremovable fixtures, &c.; but a difficulty is sometimes involved, e.g. if the schedule is prepared prior to the determination of the lease, dilapidations to tenant's fixtures cannot, of course, be included; but should the tenant leave on the premises, say, Venetian blinds, matched-boarded partitions, brass finger-plates, &c., supplied by him, all such become part of the freehold. Can repairs, painting, re-lacquering, &c., be scheduled for such against the very person who (a few weeks previously) would not have been liable?

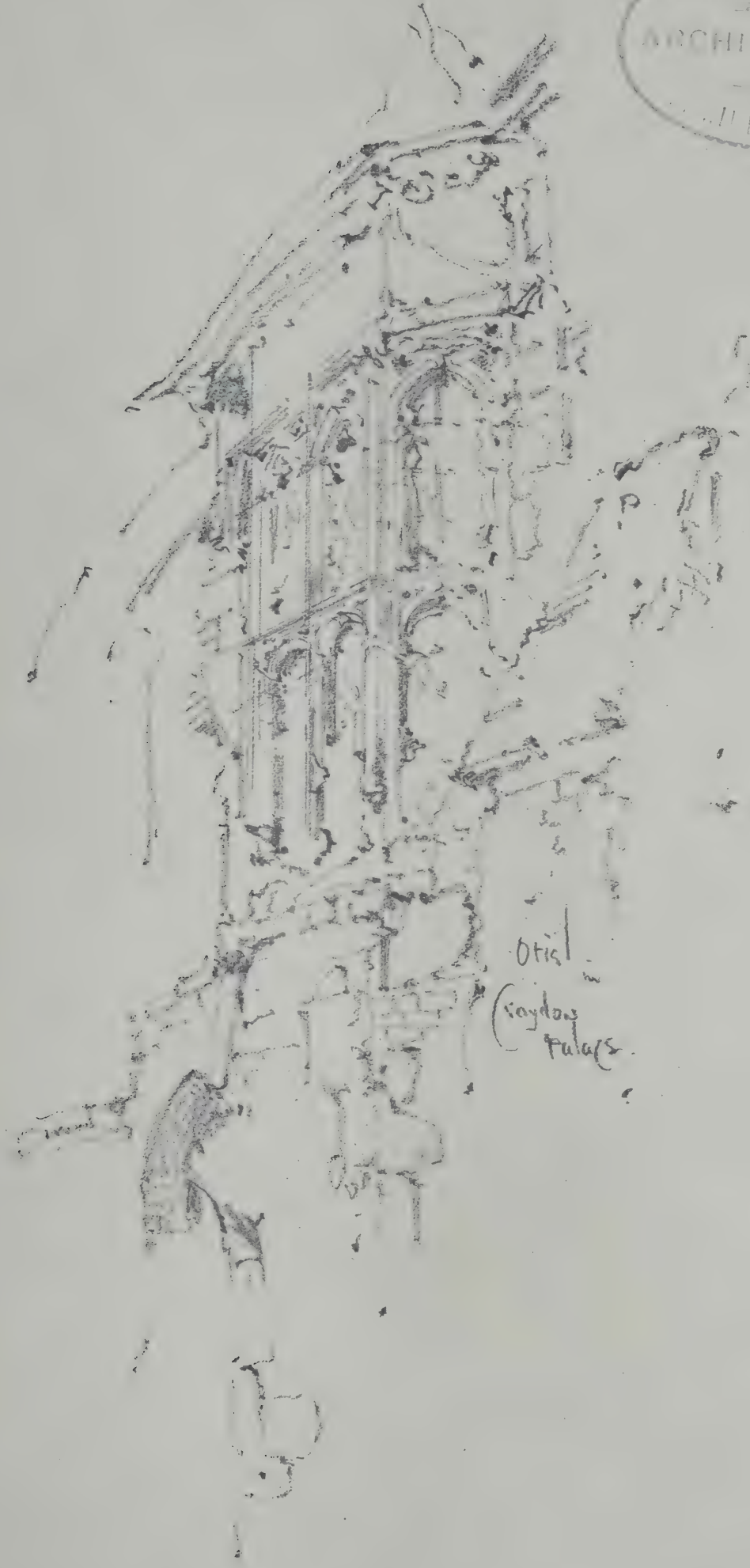
The problem occurred through a lessee's surveyor stating that he would remove certain fixtures, rather than repair; but, being subsequent to the determination of the lease, removal did not lie within the discretion of the late lessee.—Faithfully yours,

SURVEYOR.



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ORIGINAL SKETCH BY THE LATE HERBERT RAILTON.



Otis
(Raydon
Palace)

INK- PHOTO SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET FETTER LANE E.C.

ORIGINAL SKETCH BY THE LATE HERBERT RAILTON.



On the West face of Tower is a central buttress, with gables terminated in a gable, medallion between arches.

Bell Tower, Stretton Church
from East, (early morning Sun)
15/9/09. V.



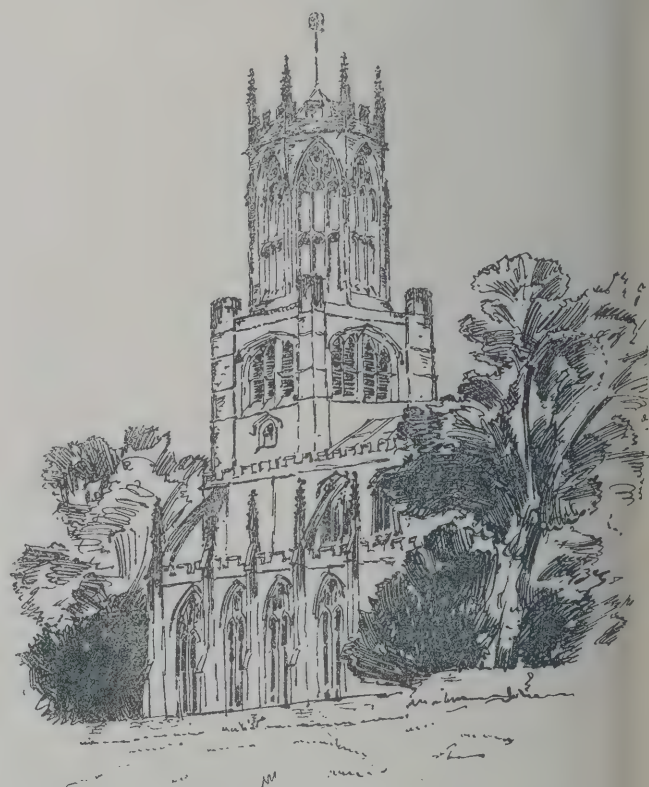
Stilton Church
Northants.
15/9/09. V.



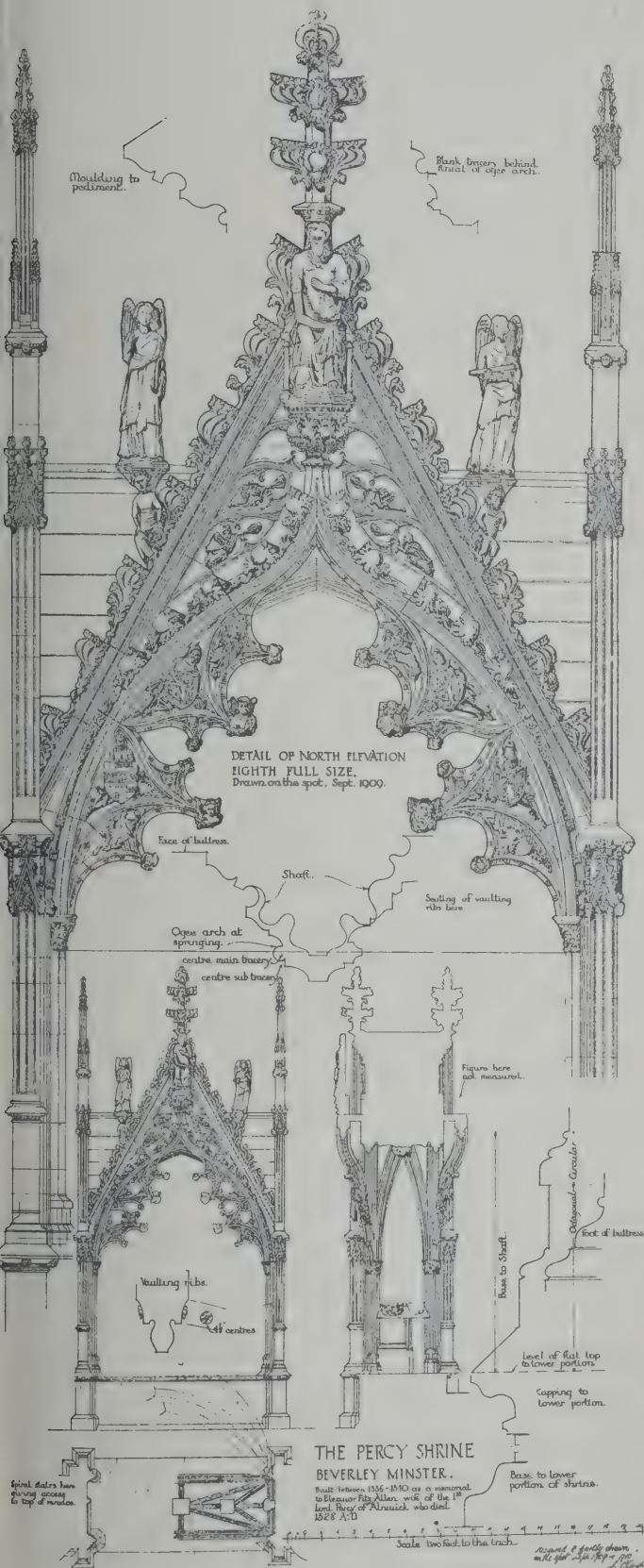
KINGCLIFFE, CHURCH.
NORTHANTS.
FROM NORTH WEST.
3/7/09. V.



CAP IN TOWER KINGCLIFFE.



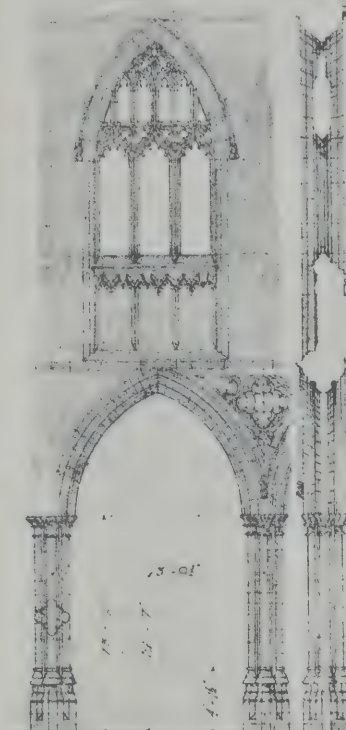
Esherby Church, from the West.
June 18/1910. V.



SCALE:
FOUR FEET TO THE
INCH.

TRUE ELEVATION
OF PINNACLE

FLAT WOODEN ROOF HERE
NOT RECONSTRUCTED



INTERNAL ELEVATION. SECTION

A BAY OF THE
NAVE, ST. MARY'S
CH. BEVERLEY.

MEASURED SEPT. 1909 &
DRAWN, NOVEMBER 1910.

S. Clough



A LABEL STOP

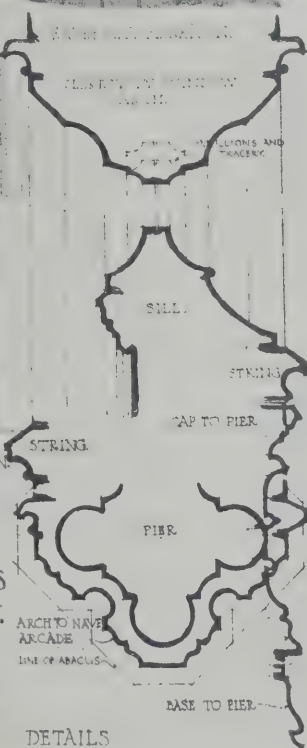




Photo by A. E. WALSH, 44 Duane St., N. Y.

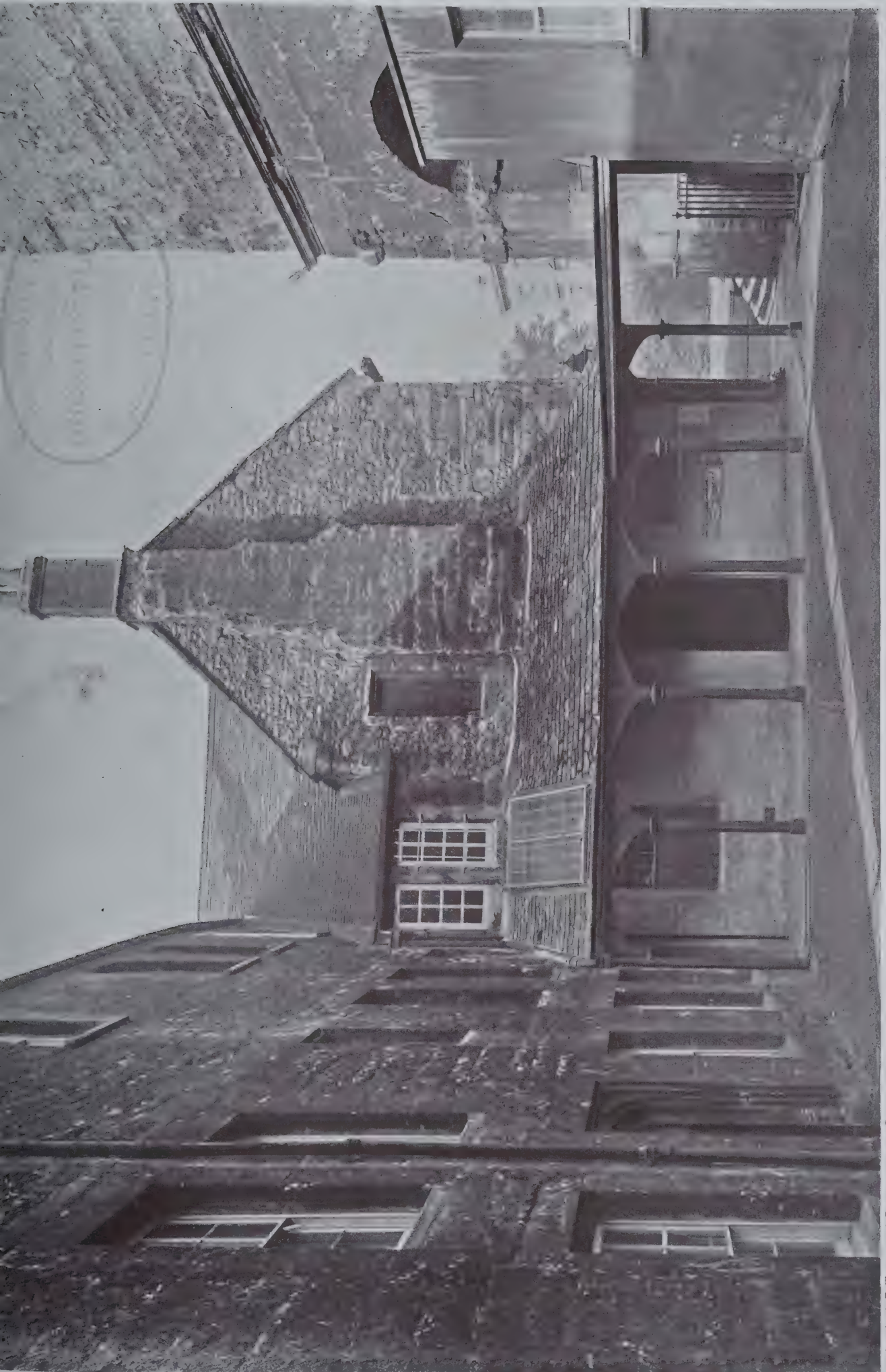


Photo by A. E. WALSHAM, 60 Doughty Street, W. C.

OXFORD COLLEGE SERIES. No. 110.—WORCESTER: BACK QUAD.

Sprague & Co., Ltd., Printers, 4 & 5 East Harding St., E.C.

The Architect.

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FORTHCOMING EVENTS.

<i>Saturday, May 6.</i>
Edinburgh Architectural Association: Visit to Hopetoun and Neighbourhood.
Architectural Association: Spring Visit to the Town Planning and Modern House and Cottage Exhibition, Gidea Park, Squirrels Heath, Romford Garden Suburb.
<i>Monday, May 8.</i>
Surveyors' Institution: Mr. J. J. Done on "Development of Building Land."
<i>Thursday, May 11.</i>
Society of Architects: Mr. A. Saxon Snell on "Hospitals."
Concrete Institute: Annual General Meeting.
<i>Friday, May 12.</i>
National Housing and Town Planning Council: Conference at Manchester for Lancashire, Cheshire and North-Western Counties.
<i>Saturday, May 13.</i>
Royal Institute of British Architects: Final date of application for the Final and Special Examination to be held June 29—July 7.

THE ROYAL ACADEMY EXHIBITION.

AS we enter the Architectural Room at the Royal Academy Exhibition we have in front of us five fine drawings of church architecture on the line. In the centre, an exterior view of the Church of St. Ninian, Douglas, Isle of Man, of which Mr. W. D. CARÖE, F.S.A., F.R.I.B.A., is the architect; flanking this, on either side, are a drawing of Mr. CARÖE's new Chapel for the North-Eastern County School, Barnard Castle, and another of the Church and College of St. Ignatius, Stamford Hill, of which Messrs. B. WILLIAMSON & J. H. B. FOSS are the architects. These three drawings are all similar in treatment, brush work in black and white, by Mr. MACDONALD. On either side of these three are two beautiful water-colour drawings by Mr. CHARLES GASCOYNE, of the interior and exterior—from the west—of the Church of The Holy Spirit, Clapham Common, a memorial church to the late Canon GREENE, the design for which, by Mr. H. P. BURKE DOWNING, F.R.I.B.A., was selected in a limited competition.

The symmetrical grouping of these five drawings forms an excellent basis for pattern making, and pattern making appears to have been the chief aim in the arrangement of the architectural drawings in this year's Academy. Water colour is balanced by water colour, monochrome by monochrome, as if the underlying thought were—well, if the Philistine will not come to look at architecture, let us see if we can attract him by pretty patterns of wall decoration.

As regards their architecture, the five drawings to which we have above referred possess the common characteristics of breadth and dignity. It is refreshing to find that Mr. CARÖE is maturing in this direction; the excessive fussiness and fidget of much of his past work is mellowed into a greater restraint that still has sufficient piquancy to prevent it from being wearisomely tame, and imparts a far higher quality to his architecture than was ever possessed by the restless superabundance of imagination of which we have seen so much in the past. The design by Messrs. WILLIAMSON & FOSS is dignified and able, but we fancy its good position on the wall is to some extent the result of the happy accident that it fits in well with the decorative scheme of hanging. Mr. DOWNING's drawings well merit their position, as the design is eminently dignified and the water-colour rendering of a very high order.

A striking drawing is No. 1,591, reminding one irresistibly of WILLIAM BURGESS. This is a design by Mr. WILLIAM HAYWOOD for a flèche in steel covered with cast lead for South Church, New York, of which Messrs. CRAM, GOODHUE & FERGUSON were the architects.

Mr. TEMPLE MOORE has in one frame (1,608) a group of three coloured drawings showing parts of the new Church of St. Anne, Royton, Oldham, the Lady chapel,

the interior from the raised narthex, and an external view of the north-east angle. Picturesque and piquant are these drawings of an apparently small, or at least moderate-priced, church. Mr. MOORE's Interior of new Church, Skirbeck, Boston (1,621), shows what is apparently a close-boarded screen or tympanum behind the rood, which stands on a beam separate from the screen, an arrangement that has ancient precedent, but is scarcely suitable for the congregational form of worship that now obtains in the English Church. Our present-day choirs do not sing the offices by themselves, they lead the congregation.

The Interior of the new Church of St. Mary, Dorchester (1,623), by Mr. CHARLES E. PONTING, is a simple line perspective, in contrast with the many carefully coloured drawings on the walls, and shows a fine dignified church with an elaborate screen, above which is a rood on one of the roof tie beams. Messrs. H. R. & B. A. POULTER's design for St. Tarcisius' Church, Camberley, and clergy house connected, is evidently inspired by the work of Mr. J. OLDRID SCOTT and Mr. LEONARD STOKES, but suffers from the intrusion of an apparently meaningless flying shore in the form of a stone arch between the two buildings, which, though possibly intended to "tie them together," really keeps them apart, like its prototype.

Generally speaking, the interiors of the church designs exhibited are more satisfactory than the exteriors, which are too frequently overwhelmed with frantic strivings after picturesqueness and an entire absence of repose, as for example in Mr. J. HAROLD GIBBONS' design for the completion of the west end of St. Augustine's Church, Highgate (1,628), a perfect orgie of buttresses and projections, very different from the stately design of Mr. HENRY WILSON some years ago, a fine conception that we regret was never carried out. Mr. GIBBONS' design is quaint and picturesque, but this church of SEDDING's does not want picturesque quaintness for its completion. Another design that would be vastly improved by the judicious use of sponge or indiarubber is Mr. ROBERT H. CUNLIFFE's for St. Andrew's Church, Accrington (1,627), which is spoilt by too much striving after effect.

An excellent study for coloured decoration on mediæval lines is the proposed reredos and decoration of sanctuary, St. Chad's Church, Far Headingley, Leeds (1,587), of which Messrs. JOHN GIBBONS & SON are the architects, and in the drawing of which we recognise the hand of Mr. J. HAROLD GIBBONS. For effectiveness in the picture, the actual colouring is somewhat, in the drawing, disguised by accidentals, but there is sufficient to show an architect the nature of the colour scheme, though it is not quite clear how much is colour and how much form. Certainly the colour, so far as evident, is superior to the form in the reredos.

MESSRS. BROMET & THORMAN are responsible for a couple of truly weird pieces of design in the reredos of



By the kind permission of the Worshipful Company of Founders we are enabled to illustrate the design for a medal to be issued by the Company, the present design being the one approved at a recent competition in which Mr. A. Stanley Young was the successful sculptor. The model is now on view at the Royal Academy Exhibition.

Otley Parish Church (1,586) and "A Sanctuary" (1,604). These gentlemen have evidently an idea that the mediæval designers of our own country, of France, of Spain, and of Germany, even in their most extravagant fancies, have not exhausted the possibilities of tracery design. The reredos is a maze of new forms in tracery, surmounted by a pergola, constructed in we know not what material. Certainly wood or stone, the usual materials of a reredos, would be inadequate for the realisation of the amazing growth of crimson rambler, or whatever may be the creeper on which the design is based. We admire the ingenuity and the originality of these gentlemen, but cannot summon up any respect for their taste. The reredos in the Sanctuary is a curious combination of diptych and baldachino.

Very different to this is Mr. CECIL G. HARE's Interior view of the restoration of Ashley Church, Staffordshire (1,613), where a genuine rood screen, original in design but not eccentric, is the salient feature of an interior where the stonework is warm in colour and the wall surfaces are plain plaster.

"THE ARCHITECT" STUDENTS' SKETCHING AND MEASURING CLUB.

THE drawings sent in for last month's subject are a very creditable set and show a remarkable degree of improvement compared with earlier efforts of the same students. We find considerable difficulty in deciding the

relative superiority of the work sent in. Some drawings are better in one direction, some in another, but there is a generally satisfactory standard throughout.

"Sans Peur" has selected one of the best extant examples of mediæval chimneys—from the Vicar's Close, Wells, and has accompanied his perspective with sketch elevation, plans and details. Thus, his drawing is a good and useful architectural study, though purely as a pen and ink drawing his perspective is a little wanting in values and gradation.

Mr. E. H. GIBSON sends two drawings, both of chimney-stacks from Haddon Hall. The chimneys in themselves are simple, and Mr. GIBSON has justifiably included in his drawings some of the surroundings with which they group in composition. Although clearly expository of the forms, the drawings are too diagrammatic for pen and ink and do not convey an adequate idea of the light and shade values. Some of the perspective is a little faulty, whilst the monotony of the pen shading in the ball-room chimney-stack is particularly unfortunate.

Mr. T. OWEN THIRTLE has drawn a chimney-stack from Blickling Hall, Norfolk, composed of three octagonal shafts grouped together. The effect would have been better if Mr. THIRTLE had mustered up courage to attempt a drawing in other than parallel perspective. His work is too much like a geometrical elevation to scale and does not hold sufficient of the character of a pen and ink drawing, largely owing to the hard outlines and absence of values. A sketch elevation of the house front fails to



show clearly the attachment of the chimney-stacks to the main building.

"Plato" has contributed a nice sheet of sketches containing five examples of different treatments of brick chimneys, from Hampton Court, Westerham, Penshurst, Salisbury and Bruges. Whilst maintaining sufficient definition to make useful architectural studies, "Plato" has produced some very effective pen and ink drawings.

"Spes" has sent two sheets of drawings, one of a stone chimney-stack from Kirby Hall, Northants, the other a brick stack from Guilledge Farm, East Grinstead. Both examples were worth study and the sketches are useful and effective, though not of the highest calibre as pen and ink drawings.

"Le Quayt" sends a study of a chimney from an early sixteenth century house at Masham, Yorkshire, comprising a perspective sketch, showing the connection of the chimney and the house, elevations, plan and details, altogether a satisfactory study of an effective piece of chimney design in stone.

We have decided to award a prize of one guinea to "Plato," and half-a-guinea each to "Sans Peur," "Spes," and "Le Quayt."

NOTES AND COMMENTS.

THE inclusion of architecture amongst the arts of production in the Copyright Bill had a rather narrow escape when the Bill was before the Standing Committee of the House of Commons. Mr. JOYNSON HICKS, who has been a consistent opponent of architecture as a legitimate subject of copyright, led the opposition, and his amendment to exempt architecture was only defeated by nineteen votes against fifteen. There would, therefore, appear

now to be an excellent chance of the Bill passing this session with the inclusion of architecture as one of the mental callings that shall receive the benefits of copyright.

IN the consideration by a Parliamentary Committee of the proposal of the Corporation of London to construct the new bridge, generally called St. Paul's Bridge, over the Thames, the petition of the Royal Institute of British Architects was not supported by counsel, and the reason for this abstention has been explained by Mr. LEONARD STOKES in a letter to the *Times*, that the Royal Institute is not in a position to fight a costly Parliamentary battle against the Corporation, but has done its duty in directing the attention of the public and the Corporation to the unsatisfactory nature of the Corporation's scheme and the inadequacy of the Court of Common Council to come to a right decision without the best advice.

NATURALLY, the Corporation want to know what is proposed in lieu of their own scheme. The Royal Institute has proposed nothing, but some of its members have suggested a straight line of road from the south porch of the Cathedral, and this has been fastened upon as the view of the Institute and of the architectural profession, and the whole force of the Corporation's case has been directed to show that this idea is more costly and less practically advantageous for traffic than their own scheme. In discussing the traffic question, it is assumed that there is only one method of dealing with crossing lines of traffic, the right-angled junction with four policemen checking alternately one or the other stream. This method has grown up of late years in the metropolis; the police have been accustomed to it, and, of course, support it. There

is no conception on the part of the public that the waste of time, the strain on horses and motors of stopping and restarting, the danger to pedestrians who get caught in a tidal wave of suddenly-released traffic, can be obviated by any of the systems to which the town planning experts of the Continent have given so much careful attention.

It is not an easy matter, but an expensive one, to prepare a scheme for a bridge over the Thames, and the best arrangement of road to make that bridge of the highest value, either for practical convenience or for æsthetic amenity. It is easy enough to draw parallel straight lines from the south porch of St. Paul's to some point in South London, but that is not preparing a scheme, and it would certainly be more dignified and more reasonable for the Corporation to promote an open international competition, not only for the design of the bridge itself, but for the whole scheme of connecting North and South London, than to stick to their own little pet project.

THERE are many alternatives to the present plan of the Corporation, some of which Mr. STOKES has mentioned, and others of which occur to us; but they are at present merely ideas, which might or might not on development prove better or worse than the Corporation's plan now before Parliament. The gist of the whole matter is that the Court of Common Council has pinned its faith to somebody's idea without having had or sought an opportunity of examining exhaustively all the possible ideas. This is the only way of arriving at the best scheme—to examine every possible idea, and by a process of elimination reduce the number until only one remains superior. Simply to take one crude idea and set it up as an Aunt Sally in order to prove the superiority of their own scheme is a fatuitous course for the Corporation to adopt. They have made a laughing-stock of themselves with regard to the Tower Bridge. Why should they repeat the performance with St. Paul's Bridge?

It is no wonder there were only twenty-six competitors for the Hartley University College, and the winners are not at all to be unduly congratulated. Having made a design for a 100,000*l.* building with the expectation that only 35,000*l.* or 40,000*l.* would be spent at present, they now find, as we learn from the report of the last meeting of the Council, that they have to prepare plans for 25,000*l.* worth of building, for the erection of which the Council have promises of 16,000*l.*, and hopes of the rest.

RATHER a novelty, and somewhat amusing at that, was the effort of a builder to make the architect pay for "extras" in a small case at the Bodmin County Court. His Honour the County Court Judge said the action had been entirely misconceived. He had never heard of such a case. There must be some "extras" in every contract, and the idea of making the architect responsible was absurd. If the "extras" were necessary through the architect's mistake, and the owners were fortunate enough to find it out, well and good, but it was a difficult thing to prove.

By the recent decision of the House of Lords in an appeal case by the Caledonian Railway Company against the Glenboig Union Fireclay Company, fireclay may be a "mineral" within the meaning of section 70 of the Railways Clauses Act, 1845. The essence of the judgment was that in this particular case the clay was of an exceptional character as to its properties and value.

THE SOCIETY OF ARCHITECTS.

THE twenty-seventh annual dinner of the Society of Architects, held at the Holborn Restaurant on April 28, was one of unusual interest and importance, owing to the announcements which were made relating to Registration and the absorption of the Society by the R.I.B.A.

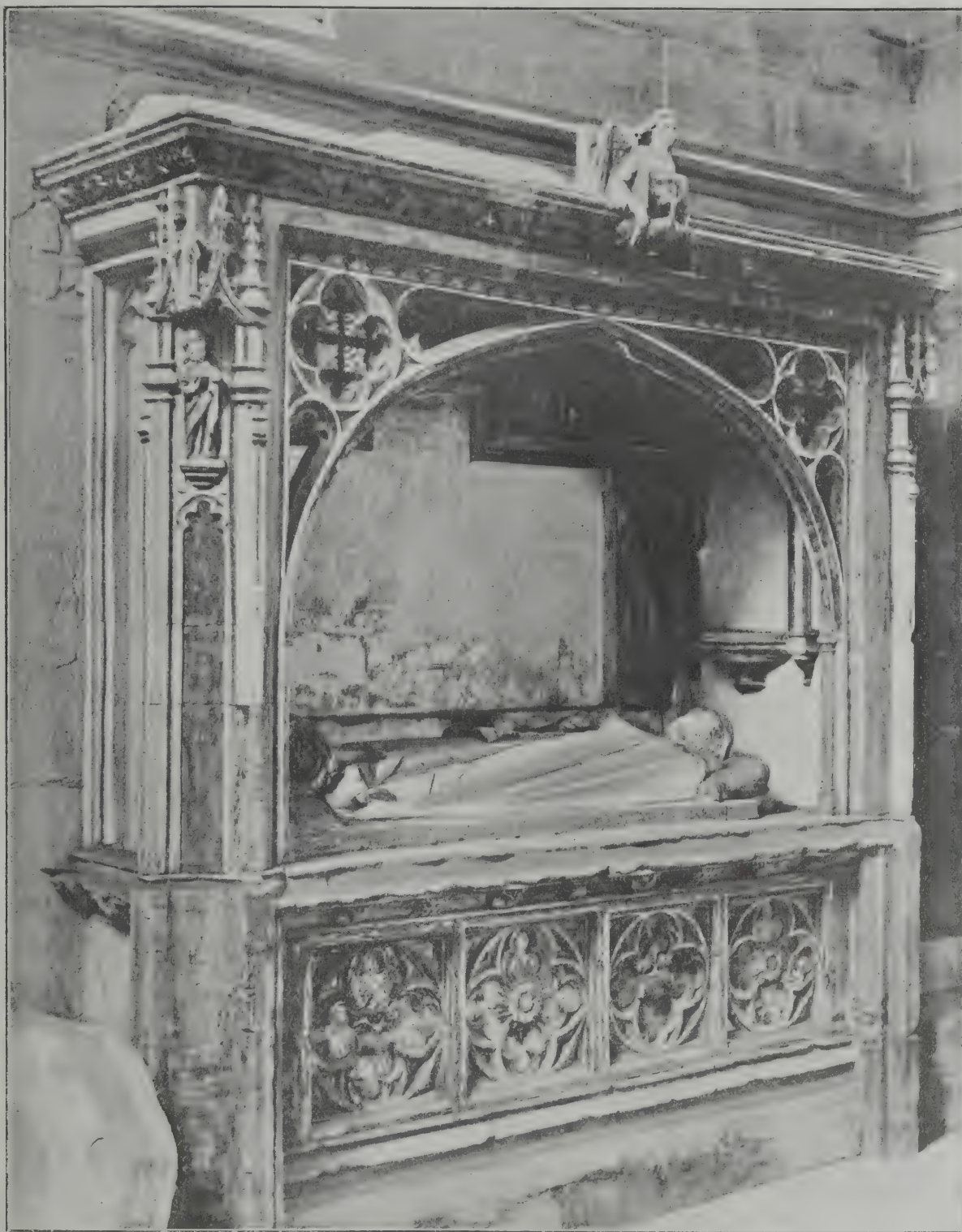
The chair was occupied by the President, Mr. George E. Bond, who has held that position for the last three years. He was supported by a number of distinguished

guests and by a very large gathering of members and their friends, numbering upwards of 200. Among those present were Mr. Leonard Stokes, P.R.I.B.A., L. A. Atherley-Jones, K.C., M.P., Edward White, J.P. (Chairman of the L.C.C.), Sir G. Lawrence Gomme (Clerk to the L.C.C.), Major H. P. Tavener Dickins, V.D. (Master of the Tylers' and Brickmakers' Company), Horatio Porter, M.A., A.R.I.B.A. (Mayor of Holborn), A. A. Hudson, K.C. (President of the Tribunal of Appeal), Sir George Riddell, G. E. Hohler, K.C., M.P., Edwin T. Hall, F.R.I.B.A., Henry T. Hare, F.R.I.B.A. (Hon. Secretary, R.I.B.A.), A. W. S. Cross, M.A., F.R.I.B.A. (Vice-President, R.I.B.A.), Geo. Hubbard, F.R.I.B.A., J. S. Gibson, F.R.I.B.A., Ian MacAlister, B.A. (Secretary, R.I.B.A.), Arthur Keen, F.R.I.B.A. (President of the Architectural Association), D. G. Driver, F.C.I.S. (Secretary, A.A.), G. Bird Godson (President of the Master Builders' Association), J. S. Holliday (President of the Institute of Builders), Leslie Vigers, F.S.I. (President of the Surveyors' Institution), W. J. Hardcastle, F.R.I.B.A. (President of the District Surveyors' Association), Percy B. Tubbs, F.R.I.B.A. (Vice-President, S.A.), G. A. T. Middleton, A.R.I.B.A. (past Vice-President), Col. F. S. Leslie, R.E. (Hon. Secretary), E. C. P. Monson, F.R.I.B.A., Prof. Henry Adams (Chairman of the Examination Committee), E. J. Partridge, F.S.I., Ellis Marsland (Hon. Auditor), R. A. Jack, H. Cartwright Reid (Superintending C.E., H.M. Dockyard, Chatham), C. Day (Borough Surveyor, Chatham), W. Banks, A.M.Inst.C.E. (City Surveyor, Rochester), Matt. Garbutt, F.R.I.B.A., Max Clarke, F.R.I.B.A., W. S. Frith, W. H. May (President, Devon and Exeter S.A.), A. W. Moore, F.R.I.B.A., H. Shepherd, A.R.I.B.A., Fred Fenning, Walter W. Thomas, J.P. (past President), E. J. Sadgrove, F.R.I.B.A. (Hon. Treasurer), A. E. Pridmore, F.S.I. (past President), R. Willock, F.R.I.B.A., E. J. Hamilton (past President), H. V. Milnes Emerson, A.R.I.B.A., C. McArthur Butler, F.C.I.S. (Secretary), T. S. Inglis, R. G. Lovell.

After the toast of "His Majesty the King," and then the toast of "Her Majesty the Queen and the other members of the Royal Family" had been proposed by Mr. George E. Bond, and honoured,

His Honour Judge Rentoul proposed "The Houses of Parliament." He said he felt his position to be one of great responsibility and great difficulty. Therefore he wanted to be extremely cautious in anything he might say. It was known that there were 500 new peers to be created, and he had been hinting that he might possibly be included among that number, especially as by virtue of his position he was more or less a lord already, being always one in the Old Bailey. But the House he knew most about was the House of Commons. This consisted of a body of men whom some were in the habit of abusing. But the House of Commons, whatever its political aspect might be, constituted the best House of Commons they had. The House of Lords was at the present moment threatened by the Commons. He himself was not as much frightened by that step as some men might be. He remembered the election of 1892 when on a hundred platforms the promise was that the House of Lords should be abolished, and a hundred members got in through it. Yet the first thing the party did on their return and the first money they spent was to recushion the House of Lords in morocco leather, as this material lasted longer than any other. The very next thing they did was to create two peers. The House of Lords will probably again survive for a very long time, though in what conditions or with what modifications it was hard to tell. In conclusion, Judge Rentoul made an eloquent appeal for a still closer union between England, Ireland and Scotland.

Mr. L. Atherley-Jones, K.C., M.P., in replying, remarked that there was some touch of irony in the fact that a humble Radical member like himself should be called upon to respond to a toast which wished prolongation and health to an institution which he was nightly engaged in attempting to destroy. He was consoled by the reflection that his party would be credited with being animated by high principles. It was recognised that the Government of this country must be democratic, and they had to be careful lest in destroying the present second chamber they did not get in its place something more dangerous to the institutions of democracy. The progress of civilisation and the spread of knowledge has made every human being in this country take a more or less responsible part in the administration. Although there was a great cleavage between the parties, they were all animated by a desire to serve the general interest. There had been many changes



THOMAS BOKKINGTON'S TOMB, EDINGTON CHURCH, WILTS.

in the type of men sent there even in his time; but generally speaking, the members had one common object in view, and that was to serve that interest and to be free and independent representatives of the people. That night the shadow of approaching dissolution rested over the Society of Architects. There was always a tinge of melancholy in the idea of submerging one's own personality in that of another. Those who represented the older body will gather new force, strength and vitality from the addition of the younger body. Though one could not help shedding a tear over the transition, the members might look to it as an assurance that the great art and science of which they were the trustees would be carefully guarded, preserved and stimulated in their new character, and that they would look back with pride and satisfaction to the work and organisation of the Society of Architects.

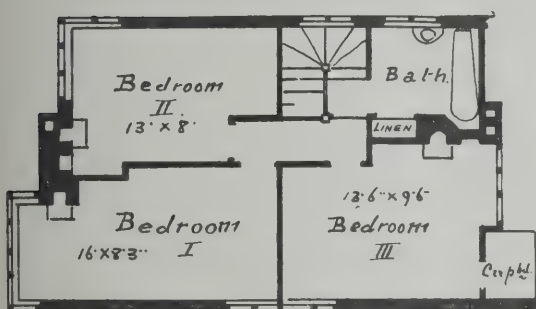
Mr. ARTHUR KEEN, in proposing "The Society of Archi-

tects," said he had been wondering why he should be singled out to propose that toast. He was, of course, very conscious of the honour; but at the same time he was placed in a very difficult position from more sides than one. In the first place how was it possible to wish long life and prosperity to a society that is shortly to terminate its career? That very evening was its swan song before it went to the shadow land. In the second place, the Society of Architects was formed for the purpose of giving practical effect to registration—a policy with which he was unable to agree. He personally could not see how the best interests of architecture were to be served by registration, for he feared that it would give recognition to some who were not entitled to it. Consequently he stood in the opposite camp. But Great Britain was essentially a democratic country, and the wishes of the great majority of architects in it were that a Bill should be brought in to give effect to this policy of registra-

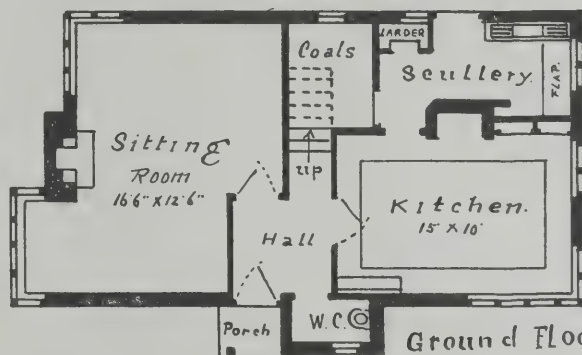
tion. As representative of a society existing for educational purposes anything that tended to further that end appealed to him very strongly. By this movement the Institute would add enormously to their number, strength, and position. At the same time the Institute was very wisely attending to educational questions, and he looked forward to the time when all education would be carried out under its strong support. In the order of nature nothing ever dies. So the vitality and force which distinguishes the Society of Architects will be incorporated into the Institute. The increase will be most valuable to it in every way. He hoped the cause of education would be very much benefited and the new movement would help in raising the art of architecture.

Mr. GEORGE E. BOND, J.P., the President, in his reply said:—The year which had elapsed since the last annual dinner had been the most successful one in the Society's history, for no fewer than 140 new members had been elected. It had in other ways been most eventful, for in September last they took possession of new premises in Bedford Square, upon which was expended a large sum of money in adapting them to suit their special requirements, but by an irony of fate just at the moment when they had established themselves in a home of their own, and quite probably as a direct consequence thereof, a scheme was initiated which will, if successfully carried through, effect a great and historic change not only with regard to the Society, but the profession generally. For more than a quarter of a century the Society had been devoting its best energies to the task of educating the general body of the profession to a just appreciation of the great benefits which would necessarily accrue, not only to themselves, but to the general public, as a result of a successful passage through the Houses of Parliament of "The Architects' Registration Bill," and now for the first time there appears to be a reasonable prospect of an agreement between all sections of the profession as to the form in which the Bill shall be presented. The Society had consistently, during the whole period of its existence, expressed the opinion that it was the duty of the R.I.B.A. to take up the question and to promote such a Bill, and it now afforded him the greatest possible pleasure to be able to announce that an arrangement has been arrived at whereby the Royal Institute will in future take the lead in this movement, and that in its efforts it will be earnestly and loyally supported by the present members of the Society. The members of the Registration Sub-Committee, who have been responsible for the conduct of the negotiations with the Royal Institute, knowing that in the present congested state of public business the ultimate success of their aims and objects could only be secured by the presentation of a Bill backed by the unanimous voice of every section of the profession, entered upon their task in a spirit of sweet reasonableness fully determined to do everything in their power to facilitate an amicable and honourable settlement. It was a pleasure to be able to state that they were met in the same reasonable spirit by the representatives of the Royal Institute, the result being the general principles of a satisfactory Bill have been mutually agreed. And, as is usually the case when contending forces agree to meet in fair and reasonable discussion, difficulties and differences, which had previously appeared to be mountains, when viewed at closer quarters turned out to be merely mole hills. Their previous conceptions of each other, as autocratic, bureaucratic, or democratic bogey men, could not stand the test of a first meeting; and as mutual illusions were gradually dissipated, it was to both parties a great pleasure to find that seven fair and reasonable human beings on one side were faced by seven equally fair and reasonable beings on the other, all without exception actuated by the highest and best motives, and each anxious to promote to the utmost of his ability the honour and interests of their noble profession. Under these favourable conditions the inevitable occurred. The question then arose why should two distinct and separate associations continue to exist, having exactly the same aims and objects and covering exactly the same ground, that is to say every part of the great Empire? So the possibility of unity was discussed, and as it was at once recognised that with the Royal Institute fully committed to the promotion of a Registration Bill, the *raison d'être* of the Society's separate existence had disappeared, and also that the grand ideal of a united profession could be the better attained under one powerful and representative institution; the question almost immediately resolved itself into one of terms and conditions, the chief difficulty being, how was it possible for a society whose membership is based upon an equality of status to enter bodily into another association composed of three distinct classes? Various suggestions were made and fully discussed, and ultimately a fair and reason-

able scheme was agreed to by both parties, subject, of course, to the approval of the Councils and members of the respective associations. Such approval has been obtained, and the scheme provisionally ratified. This will be consummated when the general principles of a Bill have been drafted and signed by both parties, so that after many years there now appears to be every prospect of differences being settled to the satisfaction of all concerned. But assuming for the moment that all these internal differences are settled, and that from the architect's point of view a reasonable Bill is prepared for submission to Parliament, public interests have still to be considered, for it should be remembered that it is only in so far as it will be to the general welfare of the community at large as well as themselves that such a Bill can be justified, or that they could reasonably expect any Parliament to approve it. Under existing conditions the public suffers enormously from ignorant and unqualified practitioners. As a result of their employment lives may be sacrificed and health injured. It suffers inconveniences and discomforts in badly arranged, insanitary, and badly built habitations, and pecuniary loss in paying again the cost of many alterations and amendments necessary to rectify errors in planning and construction, such things as a sensible and qualified architect would have satisfactorily arranged in the first instance, and frequently as a result clients are involved in costly litigation. Further, our senses are offended by the erection of ugly abortions in streets and public places. This refers not only to the nondescripts who combine the practice of architecture with sundry other trades and callings, but also to the scores of irresponsible and thoughtless young men who have duly served their three or four years' articles in the offices of qualified architects, performing all their routine duties as part of the day's work, but who have never interfered with their sports or pleasures by seriously applying themselves for one hour to the task of acquiring a practical knowledge of the multifarious duties pertaining to the practice of this most exacting profession, and who as a consequence bring upon it great discredit in the eyes of the public. These young men without practical qualifications, and with no real sense of responsibility, but simply on the strength of their ability to produce smart, sketchy elevations in the particular style dictated by the latest caprice of ephemeral fashion are the very persons who, with the arrogance of ignorance, put on a lot of side and dictate to their clients or ignore their instructions, and who by their errors in planning and construction have led a large section of the public to seriously doubt the practical qualifications of the profession as a whole. As a check upon gross incompetence compulsory test examinations were suggested as the only possible remedy. But they might be told such examinations are open to the objection that unless carried out on practical lines they place a premium on flashy smartness and spurious efficiency, and that the more intrinsically valuable qualities of personality are ignored; that under them in every profession, orthodoxy, and intellectual conventionalism are assessed at too high a value, and it frequently happens that as preliminaries costly and difficult conditions of dubious value for their purposes are imposed. But in spite of this he maintained that the examination system was the only satisfactory method yet evolved for the discovery of reliable ability and knowledge in a candidate. Therefore in the interests of the public compulsory test examinations on sound practical lines must be applied to all future candidates for admission to the ranks of the profession. Each must show that he is in possession of a sound practical knowledge of the science of construction and of the nature, qualities, and capabilities of all kinds of building materials. As a draftsman he must be able so to express his ideas with pencil and paper that they may be readily understood by any reasonable workman. He must be able to draft a clear, definite, and thoroughly intelligible specification. His legal knowledge must be sufficient to enable him to frame proper terms and conditions of contract, and to safeguard his clients' interests with regard to rights of light and other easements, building lines, party walls, rights of support, rights of adjoining owners and others, and a score of other items which, if neglected, may involve his client in expensive litigation, these are all practical qualifications closely associated with the interests of the public and which can and must be made the subjects of severe examination tests. But a person may possess all these qualifications and still be without an atom of real claim to the title architect, for there is another absolutely essential qualification, he must be an artist, actuated by an artist's motives, and in possession of an artist's ideals, having a due sense of proportion and of harmony, and a mind fully tuned to a conception of the true and the beautiful. And it is in connection with this art qualification that



First Floor



Ground Floor

COTTAGE, ROMFORD GARDEN SUBURB.

THIS cottage has been built with hollow red brick walls and roof covered with tiles. The joists over ground floor are arranged to form beamed ceilings. The windows open as casement and are divided by lead bars. The fittings include bath, lavatory basin, w.c., sink, dresser, flap table, cupboards, stores, range, and gas-piping. The cost price, including fencing, was 400l. Mr. T. Gerard Davidson, M.S.A., was the architect.

the real difficulty occurs with regard to compulsory test examinations in architecture. These ought to be perfectly simple and to the point, for necessarily the early art education of an architect must be on conventional lines. They could assume if a candidate possessed a sound knowledge of the first principles of art and of the distinguishing characteristics of the orthodox orders and styles, that, although he may not have any original ideas, his subsequent work will be of a reasonably artistic character, and such as will satisfy requirements in nine out of ten cases; and in fairness to the candidate this is as far as an art examination test ought to go. His ability to design cathedrals or monumental work of any kind was not being tested, but simply his capability of performing the ordinary duties of an average architect in a reasonably satisfactory manner. Large and important works were not given out to unknown architects indiscriminately, but either to men of experience, or they are made the subjects of competition, in which case if the promoters are wise the adjudication will be placed in the hands of an able and experienced expert. And as works usually acknowledged to be within the scope of architectural practice are endless in their variety and of all shades of importance, every candidate after proving his qualifications up to this point may safely be left to find his own level. In a profession which demands of its followers such wide and varied attainments, a young man cannot be efficient in every branch, therefore he should be encouraged to concentrate his attention in the first place on essentials, and among these should be included practical experience upon an actual building during

the course of its erection; for, from the point of view of the client, it is of far greater importance that his architect should be able to distinguish by practical handling or simple tests between different kinds and qualities of stone in block or between different kinds and qualities of building timbers than that he should be able to give the approximate date of erection, say, of the Temple of Diana at Ephesus, nor will the ability to recite in chronological order the names and chief works of the great classical architects from the time of Rhœcus and Theodorus down to Michel Angelo compensate in any way for any lack of knowledge with regard to the latest developments in sanitary science. But once having earned the right to practise architecture, he may then add to his other qualifications the trimmings and embroideries of pure culture with advantage to himself and to all those with whom he may come in contact; and although he will now be relieved from further compulsory examinations his student days are not over, but instead of the subjects of study being arbitrarily dictated by examining boards he will be free to follow his own tastes and develop along lines most congenial to himself. He may look upon architecture as an archaeological study and be content for the rest of his life to dig and rake among historic dust to find a precedent for every part of his work, very useful training to a man who is going to specialise in restoration. Or, on the other hand, he may at once determine that the cold, dead hand of the past shall not chill his brain, that he will treat architecture as a living art, which, like all other living things, has followed certain definite lines of evolution, de-

terminated generally by environment, and which is still capable of further progress and development, and there are new problems to be solved every day. A difficult task was before them in educating a large section of the public to an appreciation of its own responsibilities and interest in the question, as at the present moment it seems to have some extraordinary ideas as to the duties and responsibilities of an architect. Instead of looking for ability, all sorts of absurdities are considered sufficient grounds for his selection and appointment—that he belongs to the same club and plays a good game of “bridge,” or that he attends the same church, or that his uncle was an old school fellow and so on. Was there a more insane proceeding than that a client should practically place the spending of a very large sum of money in the hands of a man simply because he calls himself an architect without in the first place securing some guarantee as to his qualifications and bona fides? But the height of insanity is reached when the client puts men into competition as to the fees, and selects one who is prepared to accept the lowest rate of commission, ignoring the very obvious fact that a fully qualified man at 5 per cent. may carry out the work for 20 per cent. less cost than a less qualified man at 2½ per cent. Proceeding on such lines, he might find many persons who would be prepared to undertake the work without charging him one penny, but who would nevertheless, by a dexterous manipulation of provisional sums under the contract, manage to secure 10 or 15 per cent. for themselves. Therefore let there be compulsory examinations to prove a man's qualifications, and a powerful central professional authority, to which all shall be amenable, to check dishonourable practices. Both these factors will be to the benefit of the community, and neither to the disadvantage of the individual architect, for true architectural art must be based upon construction, and construction upon practice and scientific knowledge. A modern architect is not born, but made, and further he requires a very great deal of making, and even presuming he possesses all the artistic and practical qualifications previously referred to, he will still be unable to take a top place unless in all his transactions he is guided by sound practical commonsense and keen business instincts. There must always be sounded a note of sadness when one is speaking of the imminent dissolution of old associations, the severing of old ties, the abandonment of old-established habits and customs, and the burying of old idols. As a member of the Society for some twenty-three years, and during the last thirteen or fourteen years more or less closely associated with its management, he could speak of the harmonious relations which have at all times existed. As the end appears in sight they must inevitably ask themselves whether the change is going to be for better or for worse, were they going forward into the light or dropping back to obscurity? Personally he was full of hope, for, having perfect faith in the wisdom of the suggested new arrangement, he was confident when they ceased to exist as a society an immediate resurrection would follow to a new life in the parent Institute, where they would have full scope for their individual energies and where he was sure they would continue to do good and useful work in the cause of registration.

Mr. E. J. HAMILTON, P.P.S.A., in proposing “The Royal Institute of British Architects,” remarked that it was the first time they had had officially the pleasure of entertaining the Royal Institute. Yet the interests and aims of the Society of Architects and of the Institute had always been kindred, and they united from time to time on such matters as competitions, ancient lights, the Metropolitan Building Act, and the Copyright Act. From the time of the initiation of the Society its main aim had been the placing of the architectural profession on the same footing as the legal, medical professions, &c. Architecture was an art certainly, but it was the art of practical building or the art of building beautifully and appropriately; that being so, it stood in a very different position to the work of the painter or the sculptor. The work of the architect does not sink into oblivion, but stands for many years, and since people have to live in or otherwise occupy the creations of that art it is in the public interest that architects should be efficiently trained in the history and in the science of their profession. It may be agreed that the general public do not care so very much about art. This can be fully assured by means of compulsory education and registration of all architects, which will show that the profession respects itself. But they do care about the comfort and sanitary conditions of buildings, and these can only be assured by the principles of registration. The principles of registration have been admitted from the very early days of the Royal Institute. In the session of 1859-60

they passed a resolution recommending “the initiation of a scheme to be cautiously and gradually developed and brought into working order, in which too much should not be attempted at the outset, but which, in accordance with the rule now established in other professions, the ultimate result should, in their opinion, be the establishment of a system of compulsory examination extended to all architects whether members or not of this Institute.” Without making invidious comparisons between the personnel of the Council of half a century ago and of the present, one must admit that the bump of caution must have been very largely developed. It is scarcely surprising that after watching for twenty-four years the very cautious and gradual development of the principle adopted by the Institute some younger bloods should wish to accelerate the pace. The great object with which the Society started and which they have always maintained has been the great theme of registration; it was their *raison d'être*. If in these earlier days there had been more men of the character of Mr. Leonard Stokes and other leading men on the Council of the Institute there never would have been a Society of Architects. Some four years ago the Institute definitely decided upon a registration scheme and Bill. It is only by mutually working together that architects can hope to secure the ear of Parliament or of the public. The Society of Architects had to thank their President and the Committee to whom the matter was entrusted, and they must feel that on both sides there has been great skill shown in getting over difficulties. There appears to have been some criticism as to phraseology, and the word “absorption” is now employed. It is not the first experience of the Institute in this connection, for in 1842 (seven years after its formation) that body absorbed an older body known as “The Architectural Society.” In conclusion, he trusted and believed that the union would be to the best interests of both bodies and of the public at large.

Mr. LEONARD STOKES, P.R.I.B.A., said it had already been pointed out that that was the first occasion of the President of the Royal Institute being present at their annual dinner. He only wished they could have a series of them. The next best thing was for all present to come and join in one big dinner. Mr. Bond might certainly throw his fears to the wind, for if there was any honour in the Institute it would be shown now.

Mr. G. A. T. MIDDLETON, past V.P.S.A., proposed “The Visitors.” Mr. Edward White, Chairman of the London County Council, and Mr. Leslie Vigers, President of the Surveyors' Institution, responded.

During the evening a musical programme was gone through.

ILLUSTRATIONS.

OXFORD COLLEGE SERIES.—ELY.—NORTH CHOIR AISLE.

WE continue this week our supplementary series of photographs from Ely Cathedral, which will be completed in subsequent issues.

TRAVELLING STUDENT'S SKETCHES.

DURING his tour last year Mr. Walsh visited Ely, and we now publish two of the drawings he made of that cathedral.

PUGIN STUDENTSHIP DRAWINGS.

THIS week we complete our series of illustrations of drawings submitted in competition for this year's Pugin Studentship with a selection from the work of Mr. T. H. Whittaker.

At a meeting of the Manchester Society of Architects held on the 26th ult., the report and accounts were approved and adopted, and the following officers and members of Council were elected:—*President*.—Mr. Edgar Wood, F.R.I.B.A. *Vice-Presidents*.—Mr. John Brooke, F.R.I.B.A., and Professor S. H. Capper, M.A., A.R.I.B.A. *Hon. Secretary*.—Mr. Isaac Taylor, F.R.I.B.A. *Assistant Hon. Secretary*.—Mr. J. T. Halliday, A.R.I.B.A. *Members of Council*.—Messrs. A. E. Corbett, John Ely, W. C. Hardisty, F. E. L. Harris, Francis Jones, jun., P. D. Lodge, Paul Ogden, Claude Paterson, J. H. Sellers, Gerald Sanville, J. H. Woodhouse, and P. S. Worthington.

THE ARCHITECTURAL ASSOCIATION.

LIBERTI AND BRAMANTE: ARCHITECTURE A PROFESSION OR AN ART IN THE CINQUE-CENTO?

By Professor BERESFORD PITE.

(Concluded from last week.)

THE difference in building materials between Florence, Milan, and Rome should not be forgotten as influencing the respective schools of architecture. Bramante had worked brickwork in Lombardy all his life, and the travertine and perino stone were unfamiliar to him. M. Müntz acutely marks of Bramante's move to Rome that "if he wished an edifice he must now build grandly, not gracefully; the Pantheon, the Colosseum, the Baths of Diocletian, these were the overwhelming examples of which he must needs take count."

The cloister of Sta Maria della Pace at Rome was added to Bramante to the church erected by his contemporary,accio Pontelli, who had died in 1500. This was a commission from the Neapolitan cardinal Oliviero Caroffa, whose intention, Vasari says, was attracted to Bramante when on sketching expedition at Naples. This design is one of angular simplicity and grace. It is almost nervously restrained in the employment of detail, but what is used is not tacky or over-refined. The simple proportions and direct subdivision of two bays over one, of a trabeated order over a arched storey, are, like the ease with which St. Pietro in Vincoli was achieved, convincingly natural and masterly.

When Pope Julius II. (Della Rovere) succeeded after the short reign of Pius III. (Piccolomini), Bramante was in high reputation and large practice. Julius, as we know, was a man of great political and architectural ambitions; his was to have been the great tomb by Michel Angelo on which so much artistic history has turned. Vasari may be our guide for a genial description of Bramante's work for the Pope, though we must remark that probably no architect has ever had his work form the substance of research and enthusiasm so remarkable as that which Baron von Geymüller has bestowed on Bramante. Vasari describes the project formed in the mind of the Pontiff for extending the buildings of the Vatican Palace, erected by Innocent VIII., to connect with the Belvedere Villa in the gardens, forming a quadrangular centre, and enclosing a valley. The vision of Nicholas V. at the papal palace should become the resort of all the courts of Christendom bred a largeness of idea with regard to the palace buildings and their purposes that certainly was not cloistral. Julius wished to have two loggias, one on each side of the valley, to pass to the Belvedere, ascending from the valley by a flight of steps. Bramante, who, as Vasari says, "had great judgment and a most ingenious fancy in such matters," devised an arrangement of superimposed pillars represented by pilasters, which solved the levels progressively, beginning with the Doric for the part at the lowest level, then a second range of the Ionic, which became continuous from the first floor of the Palace to the ground floor of the Belvedere. A loggia of four hundred paces long was thus obtained. The water of the whole enclosure was to be conducted to a magnificent fountain in the lower court.

The great niche above the Roman bronze pine cone which formerly stood in the atrium of old St. Peter's is one of the magnificences of which architecture may boast; not only so, but stimulatingly useful, and suggestive as a practical sign, solving by appropriating to architectural purposes the differences of the levels.

The death of Julius interrupted the work, that of the architect occurring before he had completed more than one of the connections with the Palace.

Vasari tells us that "Bramante when not impeded by the parsimony of those with whom he had to act conducted his various undertakings with extraordinary promptitude; in this case such was the zeal with which he seconded the generosity of the Pope, who would have had the edifice receive birth at a wish rather than await the slow process of execution"—and we note and sympathise—"that the men who were labouring at the foundations carried away at night the mud and earth which they had dug out in the presence of Bramante during the day, and he then without further preparations permitted the foundations to be laid. The result of this inadvertence on the part of the master has been that his work has cracked in various parts and is now in danger of ruin. A portion to the extent of eighty braccia fell to the ground during the Pontificate of Clement VII. (de Medici), and was afterwards rebuilt by Paul III. (Farnese), who caused the foundations of the whole to be repaired and strengthened."

The winding colonnaded staircases by Bramante are important and interesting, and seem to be the originals of the subsequent developments at the Barberini Palace by Bernini in the next century.

We cannot now take up the story of Bramante's connection with St. Peter's; that is a chapter entirely by itself, and covered absolutely by Geymüller's great book. Vasari's somewhat imaginative sketch must suffice. He says: "Seeing the resolution with which the Pope accomplished important undertakings, and finding the desire of the latter to coincide with his own purpose and wishes, that, hearing his Holiness express the intention of demolishing the Church of S. Pietro to construct it anew, he made numberless designs to that end, and among these there was one which astonished all who beheld it, and was indeed of extraordinary magnificence and beauty."

"Nor would it be possible to display more consummate art or a more perfect judgment than were evinced by Bramante in this work: the design shows two towers, in the centre of which is the principal front of the building, as we see it on the medals afterwards struck for Julius II. and Leo X. by Caradosso (the sculptor of the frieze in S. Satiro, Milan), a most excellent goldsmith of that time, who had no equal in the execution of dies; the same thing may be seen in the medals of Bramante himself, which are also extremely beautiful. The Pope, being thus determined to undertake the commencement of that stupendous building the church of St. Peter, caused one-half of the older fabric to be demolished, and set hand to the reconstruction, with the firm resolve that in art, invention, arrangement, and beauty, as well as in extent, magnificence, and splendour of decoration, that edifice should surpass all the buildings ever erected in that city by the whole power of the republic, aided as this was by the genius of many able masters whose works had illustrated the States of the Church. With his accustomed promptitude, the architect laid the foundations of his work, and before the death of the Pope, continuing his labours to the close of his own life, which followed soon after that of the Pontiff; he raised the building to the height of the cornice, which is over the arches of the four piers, and of this part he also completed the vaulting, effecting the whole with extraordinary rapidity, as well as consummate art. He likewise conducted the vaulting of the principal chapel, that wherein is the great tribune namely, causing the chapel, called that of the King of France, to be also put in progress at the same time."

"Bramante was a person of most cheerful and amiable disposition, delighting to do everything whereby he could bring benefit to his neighbour. He was the assured friend of all men distinguished by their talents, and favoured them to the utmost of his power, as was manifest in his conduct towards the graceful Raffaello da Urbino, a most celebrated painter, who was induced to settle in Rome by his means."

"This master always lived in the most splendid and honourable manner, and in the station to which he had attained all that he possessed was as nothing to what he might and would have expended. He delighted greatly in poetry, and took much pleasure in music, hearing as well as practising improvisations on the lyre with infinite enjoyment; he would also occasionally compose a sonnet, if not in so polished a manner as we are now wont to expect, yet always giving evidence of an earnest purpose, and entirely free from errors of style. Bramante was highly esteemed by the prelates, and received various proofs of respect and admiration from different nobles, who were acquainted with his excellences. He enjoyed very great renown during his life, and this was still farther increased and extended after his death, seeing that this event caused the erection of St. Peter's to be suspended during several years. Bramante lived to the age of seventy, and when he died was borne to his grave with the most honourable solemnities, and attended by the Papal Court, as well as by all sculptors, architects, and painters at that time in Rome. He was entombed in San Pietro, in the year 1514."

More accurately, on March 11, and was entombed in the Vatican Grotto.

Bramante designated Raphael as his successor in the architectural direction of the works at St. Peter's. He had been his townsman at Urbino, and his intimate pupil and friend; there seems to be proof lacking as to a closer relationship. As also for the suggested attempt to elbow out the gigantic Michel Angelo from either the entire painting of the Sistine chapel or other works.

Bramante's office staff included great names like Antonio da San Gallo the younger, who afterwards continued the work at St. Peter's, and gradually the impression comes upon us

that architecture in the Cinque-cento had begun to take the individual habit which we know now, and that with the dawn of the following century the professional was as well recognised as the enthusiastic, gifted scientist, who combined the management of men with that of materials, and whose mental equipment was founded upon a reverence for the assured successes of antiquity, which, enlightened by true æsthetic sympathy with painting and sculpture, guided his knowledge with taste in the pursuit and achievement of beauty.

In the pursuit of a high professional and artistic ideal, it will be found that study of the architectural monuments of the Italian Renaissance, rather as expressing the individuality of the wonderful men who achieved them, will not prove unfruitful in emulation, and the attainment of even practical wisdom in dealing with such problems as peculiar and impetuous clients, and to a lofty imagination even such difficulties like the valley between the Vatican and the Belvedere may become the foundation of a triumphal architectural scheme.

The PRESIDENT said that Professor Pite had given a most interesting paper, into which he had compressed a most extraordinary amount of scholarly knowledge and information.

Mr. HARRISON TOWNSEND in moving a vote of thanks to Professor Pite, said he would like to express a sense of their indebtedness to him for the charming, scholarly and literary paper they had listened to. He had pointed out with regard to both of the subjects of his address that one need not shut oneself out from other things and confine oneself to the cold rigidity of the limits of one's own vocation. It was almost impossible to recapitulate the greatness and attributes of Alberti. He was an architect, a poet, a philosopher, a painter, a musician, a playwright and an athlete, but throughout the whole of his life he was first and foremost an architect. It was encouraging to them to see that one could work hard at one's art and still be what Alberti distinctly was—an all-round sportsman. With regard to Bramante, he was not sure that Professor Pite mentioned one of his most beautiful works—the cathedral at Saronno, about twelve miles from Milan, which had very much of what the lecturer called the simple grace of Santa della Maria. It was a very beautiful work, with the dome which they associated with several of his works. He did not know also whether they quite took in what they were shown of the relief of Agostino d'Antonio di Duccio, and how reminiscent it was of the Greek stele in design, and particularly in the half leaning pose of the figure and the treatment of the drapery. The allusions to Baron Geymüller naturally came from any one who had studied Bramante's works, and had studied much of the work of the Renaissance as it was set forth in literature, and his recent death had robbed them of one of the most learned writers of that period.

Mr. GERALD HORSLEY seconded the motion, and said that Professor Pite had given them the history of these great men in a way particularly interesting to them, because he had pointed out certain conditions existing in their time which they also found existing in these times. As Professor Pite had told them, they must study these works of the past before they could begin to design at all. He thought, however, that Professor Pite was inclined to be more humorous than exactly accurate when he suggested that all their conditions had been brought about by the actions of these two men. They had, it was true, imposed the orders upon them; they had obliged them to study the works of the past, but he did not think they were responsible for the movement for registration of the present day. At any rate, their brother architects abroad, who were equally influenced by these great architects, had not found it necessary to register. He was reminded by seeing the photograph of the interior of San Satiro, that Mr. Stannus used to say that Alfred Stevens was very greatly influenced by that particular building, and he thought there was a great similarity in some of the works of Alfred Stevens to the little octagonal building, and particularly to the frieze which ran round the arches. The combination there of bronze and marble or bronze and stone, was one which Alfred Stevens was particularly fond of. He happened a few weeks ago to have been again reading Vasari's account of Bramante's life, of which Professor Pite had given a few interesting extracts, and he remembered that Vasari said that Bramante invented a form of timber roofing. He would like to ask Mr. Pite if he could explain what Vasari meant by that. Vasari was in the habit of making wild statements, but it occurred to him at the time that perhaps Bramante, if he did not really invent, yet was one of the first of the Renaissance architects to con-

struct some of his roofs in a particular way. If it was the case, he was sure that Professor Pite, with his great knowledge of the Renaissance, would be able to tell them. It occurred to him that there might be a roof of a novel kind in a building like the Villa Madama, outside Rome, which Bramante designed. There they had wide corridors which were roofed over with vaults, and these vaults had plaster decoration inside which they knew of, for there was a beautiful model in the South Kensington Museum. He would like to know if these vaults were constructed in the usual Italian way, with brick and concrete, or whether they were constructed of timber, because it occurred to him that the reference of Vasari might apply perhaps to a building of this kind, which was a country house, and which would have been built very quickly.

Mr. BOLTON congratulated Professor Pite on the extremely interesting paper, but said he had considerable doubt himself as to the lesson he wished them to draw from it, because he was not at all sure that there was that contrast between the two men which Mr. Pite seemed inclined to make. They must remember in considering this subject that the Italians, in all epochs, had been very weak on the constructive side. In the construction of vaults and foundations, and so on, that had never been understood in Italy in the way it had been understood elsewhere, and these little incidents which happened to Bramante's buildings were common in Italy, even at a much later period. He did not feel sure that the analogy Professor Pite had attempted to draw of the difference between the two men, the one being a dilettante and the other a professional architect, was altogether borne out. If they took the Church of St. Andrea at Mantua, they had a building constructed with more total disregard of material than any building he had seen. He remembered going over the building, and being told that the crown of the vault was nine feet thick. He put a rod down and ascertained that the vault roof was of that enormous thickness. St. Andrea at Mantua was not only Roman in building and disposition, but also Roman in construction. If a plan had been shown they would have seen that the construction of the church was really that of niches hollowed out of the walls of enormous thickness. He thought in scheming out that church, Alberti had in his mind, not only to use the details of Roman architecture but also the actual construction, and if they added to that that he undertook this great work of architecture and carried through the constructional as well as what they might call the artistic side of it, then he did not think they could look on him as a dilettante architect. No doubt he was a man of too many occupations to be able to complete his buildings as they would like, but he could not himself see that there was that real contrast between the two men that Professor Pite would have liked to have made the moral of his paper. However, that did not detract in the least from the great interest of the paper. The great church of Alberti at Mantua was one he wished they could all see, because from illustrations it was difficult to understand the grandeur of it. There was no doubt, that on the whole, it was the first of the Renaissance churches. Of course Alberti would have spent enormous sums on its heavy construction and was not able to get so far as could be wished, and the dome was built by an inferior architect later, and so they had not the satisfaction of seeing the church with the dome as he would have planned it. Many of the illustrations of the building were very inaccurate. The west end of the church would have been very interesting if it had been finished, but unfortunately it remained very imperfect. He thought that the great church at Rimini was undoubtedly of singular interest; it was an extraordinary idea of a sort of sepulchral edifice. The great Belvedere scheme of Bramante was unfortunately ruined by the construction of the Vatican Library right across the centre. It was impossible, however, to suggest the removal of the building, which was a fine building in itself, but had entirely ruined the conception. The great pine cone he always understood came from the dome of the Pantheon. There was no doubt that the church of San Pietro was a building of extreme perfection. The working out of the Doric order was marvellous. There was a crypt underneath, and below was a hole from which sand was taken out which the pious carried away. It was traditionally said that this was where St. Peter was crucified. When they came to St. Peter's the work led to enormous troubles. The foundations of the great piers were extremely badly done, and the masonry was so bad that it cracked. The piers, as they saw them, were cased. They had to be cased, and their size was thus enormously increased. There was a great deal of controversy about this, but there could be no doubt that a great deal of time was

pent in strengthening the structure before the work went on. All authorities did not accept the view of Geymüller with regard to Bramante, and he himself thought that Geymüller was a little carried away by his subject, and would have liked to make out that Bramante anticipated a good deal of the Renaissance to an extent which the drawings in front of him did not justify. The subject was a very difficult one, but there was no doubt that the Renaissance gradually solidified, and it was impossible to draw an exact line. It went on through Peruzzi, and afterwards Palladio took it up, and in his hands it got settled. He did not think they were justified in looking back at the work of Bramante, and attributing to him ideas which really took time to develop. It was very easy to look at some of his sketches of Bramante, and in the light of what we now know, read into them rather more than could be carried out at that time. Not only was there a continued development of the application of Roman architecture, but the Renaissance was carried on by many men. They must guard themselves against looking at sketches and reading into them more than the actual knowledge of the time justified. Of course, of all the students in the school of Bramante, undoubtedly the cleverest was Peruzzi, but he, unfortunately, died very young. The few buildings he left showed extraordinary sense of architectural design. The sack of Rome broke up the school of architecture and painting, and the artists were scattered to different parts. The very promising school which might have led to so much was undoubtedly disastrously affected by the great event.

Mr. T. FYFE thought that Bramante ought to be characterised as a man of a very illusive personality. His personality was very difficult to find, and he thought it was quite a sound view to characterise him as the great practical practising architect of the fifteenth century, because the man was really lost in his work. He was sorry Mr. Bolton did not refer to Saronno, because Mr. Bolton first put him on it, and he thought very likely that some of the work at that church there was by Bramante. As for Alberti, he thought he was one of the most engaging personalities of the Renaissance. He remembered going to Rimini and the effect the church had on him. Alberti had dressed a Gothic building with classical detail. He could not help feeling that Alberti must have had a great deal to do with the inside, although the decoration might have been done by Duccio.

Mr. POTTER hoped the lecture would not be the last of the kind they would have. It was one of the most interesting periods of Renaissance which had been dealt with, and one of the most critical, because in Alberti they had an intense student of Roman work, and the results were shown, if he might so express it, as "copying the Roman system of design." It was interesting to note how, when Bramante came to Rome he was influenced by Roman work, and yet in his palaces he used the orders. Bramante's work was always influenced by the neighbourhood. His work in the north of Italy had a character suitable to Lombardy, and his work in Rome had the classical feeling one would expect there, but in both cases one saw the true designer and the true architect. Although everyone might not agree with the system of design which these Renaissance architects revived, one thing stood out which they should all try and study, and that was their ability to design in whatever style they might happen to have adopted. All their work should have a studiousness and a knowledge of design. Their design was a composition in which one idea of feeling was predominant, and the details were truly subsidiary portions, which was what they did not get in a great deal of the later Renaissance work, and a great deal of modern work.

The PRESIDENT said that as he had not visited the buildings which had been dealt with, he was not prepared to add anything to the discussion. They had, however, to thank Mr. Gamble for lending a very interesting drawing by Alfred Stevens. Following the papers on these Italian masters of the Renaissance, he thought it would be very interesting to have a paper on the English representative of the time, Alfred Stevens. It has been said of Stevens that had he not been the greatest English sculptor, he would have been known as the greatest English painter.

Professor PITE, in reply, said he must apologise for not having been able to write his paper in time for copies to have been sent to some of the speakers. He had, however, had to prepare the paper since Easter, and in this connection Mr. Horsley had unfortunately enquired as to Vasari's meaning about Bramante's roofing. It was an interesting passage, but he had not worked it out. He must look it up. The discussion had been an extremely interesting one, and showed how vastly interesting these lives of the Renaissance practising

architects were to students. They had paid compliments to the dead in regard to Geymüller, but he ought to have complimented Mr. Bolton whose paper some time ago on the Italian churches was of great practical value. Mr. Bolton had a quickness of thought accompanied by a quickness of hand in drawing, which made his paper a valuable addition to their knowledge on this subject. At the same time, he thought Mr. Bolton's remarks rather justified his suggestion that Alberti was a dilettante. With all deference to Mr. Harrison Townsend, he was not an architect first. He was an antiquary first. He was a sort of classical philosopher. His main interest in life was the classics, and it was that side which he ventured to suggest as the dilettante side. It was only by way of contrast. It was by putting the two men side by side that he suggested the moral in the paper could be drawn. It was an interesting analogy, if they wanted one, but he would say, "Don't push it too far." He was interested in the pine cone suggested by Mr. Bolton. The real point was whether the dome of the Pantheon could have supported the pine cone, and he had his doubts. The most interesting point about the pine cone was that Wren was so enamoured of it that he constructed two on the west towers of St. Paul's. He knew that Geymüller praised the school of Bramante unduly. He was like all dilettante scholars; he had Bramante in his mind, and saw him everywhere. Mr. Potter seemed to be distinctly pedantic about the wisdom of applying orders, and all the rest of it. In these matters they, as a rule, invented the principles after the facts. They had the facts, and looked for the principles, and he thought the principle was obvious here; viz., that it was the work of the antiquarian. As to the President's suggestion of the paper on Alfred Stevens, he thought they were living too near his time to write about him yet. Stevens was in Italy fifteen years, and during that time he studied and absorbed detail in the most extraordinary way. He never lost that Italian love of his, but he was a little doubtful as to his being the next link. The real link that they had with Michel Angelo was Inigo Jones, and what Jones saw and learned in Italy he built in England. It was to be borne in mind that Wren never visited Italy at all. Their direct and immediate link began with Jones, who went to Italy just after the death of Palladio.

ARBITRATIONS.*

IT is with pleasure that I address you on the question of arbitrations, a subject, to the lawyer's mind, of great interest, and which ought also to be of more than ordinary interest to the layman, as a quasi-legal subject with which many men dabble, with more or less success, and with more or less, and often less rather than more, knowledge. Last November I delivered a lecture to the members of the Auctioneers' Institute in Russell Square on a branch of the same subject. I then stated that I chose the subject because I thought that in all probability many members of your Institute would most certainly be engaged somewhat frequently in the near future, not only in connection with arbitrations in the ordinary sense of the word, but with questions of the value of land, under the Finance Act, and the proceedings connected therewith, which proceedings, although called valuations, will, in my opinion, really be arbitrations and not valuations. The rules for procedure before the referees and the method of obtaining the opinion of the High Court are all much more on a par with arbitrations and "judicial inquiry," which we shall consider later on to-day.

As years go on, arbitrations are undoubtedly very considerably on the increase, for in most local Acts of Parliament, in tramway, gas or electric light, and municipal improvement Bills, besides numerous agreements and mercantile documents, clauses are inserted providing for the reference of all disputes between the different authorities, companies, and persons to arbitration (frequently giving some Government Department, such as the Board of Trade, power to nominate the arbitrator); consequently it behoves everyone to be in possession of some knowledge of the subject, and more especially the members of your Institute and kindred societies, the members of whom to a very large extent are engaged in advising persons respecting that class of property usually thereby affected. The lecture I delivered in London on "Arbitration Procedure" was printed and sent round by

* A lecture delivered by Mr. George Phillips, J.P., of the Inner Temple, barrister-at-law, at Birmingham, on Thursday, April 27, to the Birmingham and District Branch of the Auctioneers' Institute of the United Kingdom.

the Institute to all its members. I believe, therefore, you should have all received a copy, though I presume some of you deposited it in the waste-paper basket with those friendly letters marked "private" which some of us receive offering kindly and financial help by way of loan of any sum of money without any cost or security and at a moderate rate of interest; perhaps suggesting just a small preliminary fee. Others of you may have read it.

I will endeavour therefore not to travel over the same ground again to-day, but rather to somewhat enlarge one or two of the topics which I then only touched lightly upon and which seem to me capable of being advantageously dealt with in somewhat more detail.

I shall be very glad, if any gentleman wishes to put any questions to me, to give an answer to the best of my ability so far as an opinion can be given to a general question.

We will consider what an arbitration is, then distinguish arbitrations from valuations or certificates given by valuers, architects, or engineers, and what appeal if any there may be; lastly consider who should be arbitrators and their qualifications.

An arbitration is a determination made by one or more persons at the request of at least two parties for or upon some dispute or controversy between those parties. The term arbitration is not defined in the Arbitration Act.

For there to be an arbitration there must be:—

(1) A dispute or disagreement, and

(2) A dispute or disagreement which it has been agreed is to be settled, although by a judicial inquiry, yet not by any ordinary Court of Law, whose jurisdiction is therefore ousted, as explained later.

If there is no dispute there cannot be an arbitration, but there may be a dispute and yet there may not be an arbitration, for if the dispute is one which is to be settled by some person by the exercise of his own skill, knowledge and (or) judgment, without a judicial inquiry, then that is not an arbitration in the proper sense. I do not mean that an arbitrator must not use his own skill or judgment in trying a particular dispute, because that is the very thing he is expected to do, but as an arbitrator he must decide in a judicial manner and not merely on his own knowledge.

This question of the existence of a dispute or difference is most important to keep in mind, having regard to the next question we are to consider, namely, the distinction between an arbitration and a valuation.

Two valuers are appointed to settle the question on sale of the value of some particular thing or object or property, and if they differ an umpire is to settle the matter; the umpire is appointed, then the valuers act. "At the time when the umpire is appointed it cannot be pretended that any dispute has arisen. The vendor and purchaser have respectively agreed to sell and to purchase the particular thing at a price to be fixed by valuation, and the price not yet being fixed there was nothing in dispute between them. If the valuers could not agree as to the price an umpire was to be appointed, but nothing need be known to the vendor or purchaser about the matter."

Think of the numerous cases of this kind where there is no dispute in which therefore there is no arbitration but a valuation.

The distinction between a valuation and an arbitration is one of some little interest, especially it seems to me to members of your Institute, and in the lecture I gave in London I gave extracts from two judgments which will quite well bear repetition.

The distinction is important to the lawyer because—whether the matter is one of valuation or arbitration—it settles the question of whether the Arbitration Act 1889 applies or not and whether the arbitrator should proceed judicially.

A valuer can, of course, be an arbitrator the same as anyone else, but where a valuer or valuers have to decide value only that is not an arbitration. The result of such work is a valuation, not an award. On another occasion I hope to be able to consider the opposite side of the question as to what is a valuation, what form it should take, and the liability the valuer incurs, for I feel myself that in future the valuing of property will become more and more necessary and important, having regard to the Finance Act for purposes of probate and mortgages, for valuers will, in the future, have to use more skill than they may have done in some cases in the past. That statute will undoubtedly make it much more necessary for the rising generation to be *au fait* with these legal questions than has been the case.

If it is the intention of the parties and "if you find by the agreement that the parties desire to have their case decided by some one who is to hear evidence and have the

matter argued before him, then that is a judicial inquiry to be conducted by an arbitrator. There is no doubt about that. On the other hand, if you have a person appointed to prevent any dispute arising such person is not an arbitrator. There is perhaps a third case where a person is to decide after a dispute has arisen but without hearing evidence. Such a case is much more difficult to decide, but it must be decided upon the same principle, namely, whether there is to be something in the nature of a judicial inquiry or not. Valuations for probate, for purposes of assessment or for mortgage we are not considering to-day. The valuations we are considering are those for ascertaining questions of value between vendor and purchaser, incoming and outgoing tenants, transfer of business, question of goodwill, the passing of benefices, and such like proceedings.

Again the matter may not be an arbitration but the right to enforce a claim may be dependent on a valuer's certificate.

Take a building contract, for example, where the parties have mutually agreed to abide by the decision of the valuer, architect, or surveyor (we will call him to-day the valuer to save repetition); the builder having no claim for any money payable under the contract and the building owner no claim for damages or penalties or liquidated damages until the valuer has issued his certificate.

The valuer has to issue his certificate that certain work has been carried out in accordance with particular specifications and conditions, and that certain sums of money are payable therefor, either by instalments or in a lump sum or according to a price list and quantities schedule, as the case may be; further, possibly the building owner may be entitled to certain deductions or allowances for non-performance of certain work or for badly executed work.

In such cases the person granting the certificate may be the agent of one of the parties or may be a quasi-arbitrator or possibly an arbitrator in the full sense of the word. It is clear that in most cases this power in favour of some one standing between the builder and the building owner is very desirable, if not absolutely necessary, for if he was not there directly the architect condemned materials the builder might stop work and claim arbitration, thus putting the building owner to great loss by reason of long delay, loss of interest on capital, &c.; in fact, the owner might be in a sorry plight.

As to the law two cases on this question of certifying have been decided; in one where the matter was left by two parties to the judgment of a third to determine their rights, and the task of so doing was not a mere matter of arithmetic, but involved skill and knowledge, it was held he was in the position of a quasi-arbitrator and no action would lie against him for what he did in the exercise of his functions as such except in the case of fraud or collusion; the other was one where the architect acted as a paid agent for the building owner, he was held liable to his employer in damages for passing bad work; this decision was subsequently upheld by the Court of Appeal. In the second case the point does not appear to have been taken that the architect was acting as a quasi-arbitrator, and the Court decided that the architect's certificate, although final as between the contractor and the employer, was not so for the purposes of a claim for damages between the employer and the architect.

In one text book on this subject the author, while drawing attention to these cases as above and saying they are difficult to reconcile, thinks the first is right. I don't like to differ, but I must say there seems to me to be better arguments in favour of the second.

In connection with this matter one very important fact to note is that the certificate is more frequently than not a condition precedent to any claim being made. Contracts of this kind often provide that no payment is to be made except on the certificate of the valuer, and in such event the position of the valuer is one of considerable importance. He has a duty to perform towards both parties, and must be careful to act fairly. A case came under my cognisance not very long ago. A contractor had agreed to execute certain work to the value of 50,000*l.*, to be paid as to 5,000*l.* on the foundations being completed and twelve bills to be given to the contractor for the balance of 45,000*l.*, whereby such balance was payable by equal quarterly payments with interest at five per cent., such bill to be dated when the purchaser's engineer had certified that the work had been completed to his reasonable satisfaction, the contractor giving full guarantees for any bad workmanship for a period of twelve months. The work was completed, but one small piece of machinery worth about 250*l.*, which was supplied by a sub-contractor, was not of such quality as to satisfy the contractor, who pointed the defects out to the engineer of the purchaser and undertook to replace the same. The engineer himself appeared to be

satisfied, and the contractor asked for the certificate of completion, and sent the bills to the purchasers for acceptance. The contractor heard nothing, but on pressing for the bills some time after the engineer wrote and said that he "was instructed by his directors not to issue his certificate until this small piece of machinery was replaced." This meant a delay of several weeks, whereas the plant could have been worked as it was. The contractor found out that the owners did not want to start using the buildings and plant, and it looked as if they were delaying the matter so as to avoid paying interest on the 45,000*l.* and defer the payment of the instalments. The contractor consulted his lawyers, and was advised to take proceedings against the purchasers on the ground that the engineer had ceased to act under the contract, and by acting on the instructions of his directors as he said he was doing and not on his own skill and discretion, had taken upon himself to act simply as the agent of his employers, and that his refusal to grant a certificate was unreasonable. The matter was never fought out. I do not know whether the purchasers took any legal advice, but directly the contractor gave notice of his intention to commence legal proceedings the purchasers accepted the bills without even asking for their engineer's certificate.

(To be continued.)

THE ILLUMINATING ENGINEERING SOCIETY.

(Report of meeting held April 24, continued from p. 275.)

MR. P. J. WALDRAM entitled his paper "Some Notes on the Effect of Wall Papers on Illumination." It was as follows:—

When one considers the enormous development of gas and electric lighting industries throughout the world, it seems strange that few exact rules should exist which would enable any given degree of illumination to be pre-determined from illuminating units of given candle-power distribution.

Still more strange does this appear in view of the large army of consulting electrical experts whose chief business it is to specify the number and candle-power of illuminants which will give satisfactory illumination under given conditions.

The problem is one which comes constantly—almost daily—before every one connected with the huge modern industry of artificial lighting, from the officials of the great supply companies down to the small builder or the village gasfitter. But it would be difficult to find any one who could say what illumination on a table or desk could be expected from illuminating units of given candle-power distribution in the presence of walls and ceilings of given colours. The architect, whose efforts will to a large extent be made or marred by the results of the lighting installation, and the householder who has not only to endure the results of any mistakes but to pay for them, both have the doubtful pleasure of knowing that the knowledge upon which they are forced to rely is still largely guesswork.

A large amount of labour and research has been devoted to determining with great exactness what flux of light is emitted in different planes by different units of illumination; but it is difficult to apply such knowledge to practical problems of illumination because the important factor of reflection and counter reflection from walls and ceilings has been neglected or shirked on account of its real or supposed difficulty. It is no exaggeration to say very few experts could say whether this factor in any given case will increase the total illumination by 10 per cent., by 50 per cent., or by 100 per cent.

A not unusual way out of the difficulty is to calculate the direct flux only, leaving any increase due to reflection to make up for subsequent deterioration in lamps. This would be reasonable if one had even an approximate idea of the relative values of the two. As an excuse for almost complete ignorance it is apt to appear to the architect or his client a trifle thin.

It is moreover a direct temptation in cases where economy is of importance, to specify those shades which tend to concentrate the rays of light into a given specified working plane, leaving the walls and ceilings objectionably dark, and leaving the working plane under the disadvantage of a strong undiffused light, very liable to cause shadows and glare from glazed surfaces. The secret of all successful artificial illumination is to approximate as closely as we can to those conditions of daylight under which our eyes have developed; and the property which all artificial illuminants lack is diffusion.

Our eyes accept without protest huge differences in range

of daylight because it is so perfectly diffused by the enormous depth of atmosphere through which it must pass; but a difference of even two or three foot-candles in artificial illumination will cause considerable inconvenience.

As Mr. Harrison has pointed out, shadows, which are distinctly restful to the eye in daylight, are similarly beneficial in artificial lighting. But shadows, or rather differences in the intensity of an otherwise objectionably uniform light, can be obtained by providing surfaces within the range of vision which reflect different proportions of light.

Optically, therefore, it would appear that the correct policy is to utilise as fully as possible the reflecting and diffusing properties of walls and ceilings, and to afford relief from trying uniformity by the use of coloured surfaces, in positions where they will catch the eye without unduly reducing the efficiency of the installation.

A successful scheme of artificial illumination would seem to demand collaboration between the architect and the lighting expert at an early stage in the design. But architects are by way of being fairly shrewd (popular ideas notwithstanding), and they are not likely to vary their designs or their schemes of decoration unless the lighting expert can base his requisitions upon exact knowledge, and can answer pertinent questions thereon. The more, therefore, we can ascertain about the subject and the less we have to trust to guesswork the better.

What is expected of any scheme of artificial illumination is as follows:—

1. That the working or table plane of the room shall receive an equable light, as much diffused as possible, sufficient for the purposes for which the room is to be used without being excessive.

2. That the walls and ceilings should receive and reflect such an amount of light that they appear to be neither too glaring nor too dull, with all essential architectural features brought into sufficient prominence.

Up to the present it has been customary to more or less neglect the wall and ceiling illumination and to consider the working plane illumination as being a criterion of the whole. This is not only wrong, it is injudicious. An interior may have an excellent illumination on the table, but not one person in a hundred would give it credit for being a well-lit room on that account. The walls are what practically everyone unconsciously judges by. According as they are bright or dull, warm in tint or cold, so, rightly or wrongly, the illumination of the room is popularly classed. The light reflected by the walls and ceilings has a psychological effect upon those who use, judge, and pay for it which neither the architect nor the lighting expert can afford to disregard.

Commercially, too, the reflected light from the walls and ceilings is important. Gas or electricity is sold and bought in order that a certain amount of light shall be reflected into our eyes from objects which must be viewed under artificial light, but lamps and mantles emit light in all directions, and users ought to understand that a large proportion of light which falls upon walls and ceilings of poor reflecting capacity is absorbed permanently, and represents money thrown away without any result.

It is also in the best interests of those who sell illuminating energy or the means by which it is utilised to be in a position to point out to their customers that buying light in order to feed the capacious appetite of, say, dark red or olive-green papers with that expensive commodity is hardly conducive to satisfactory results. The best and cheapest advertisement is a satisfied customer. A dark-walled room with a dull ceiling will not only always look dull, but also will actually be decidedly more expensive to light than a similar interior possessed of better reflecting surfaces. Light walls not only impress the user, they also assist very materially to actually illuminate the ceiling, the table planes, and themselves. Considering that rooms can be lit entirely by reflected light from the ceiling and walls, with an almost entire absence of shadow, it is obvious that ignorance of the value of such an important factor is almost inexcusable. There is a need for recognised standards of surface brightness which will be satisfactory for different classes of interiors, and the author ventures to suggest that the Council should take steps to establish such standards.

The predetermination of interior illumination is at first sight by no means an easy problem. The proportion of light thrown upon walls, table, and floor is subject to variation with every alteration of shade and height of lamp. Then the ceiling reflects not only on to the table and floor, but also on to the walls, which, in turn, reflect partly on to the floor and partly back to the ceiling; and all these incidents of re-

MODERN EUROPEAN ARCHITECTURE.
GERMANY.



HOUSE AT WACHWITZ.—Professor WILHELM KREIS, Architect.

[From *Moderne Bauformen*.]

flected light are reflected again and again until the mind refuses to grasp further complications.

But however complicated reflection may be, its total effect at any point can be ascertained by simply screening off any direct rays previously incident on that point from the light source. If such results were obtained, averaged, and recorded for a sufficiently large number of interiors and conditions, there would be little difficulty in determining, at least approximately, what reflected illumination might be expected from any given flux of direct light on walls and ceilings of different colours and textures.

If for any situation the direct flux were calculated from the candle-power distribution curve, the indirect or reflected flux deduced from results obtained under similar conditions, and the surface brightness of the wall surfaces ascertained by multiplying the flux direct and indirect incident upon them by the coefficient of reflection of their colour and texture, then the essential conditions of interior lighting could be satisfactorily predetermined.

Reflection-coefficients.—A very exhaustive table of the reflection coefficients of various wall-papers has been prepared by Dr. Louis Bell, and will be found in a paper read by Mr. Leon Gaster before the Association of Engineers in Charge (London), on December 11, 1907.

The author is not quite clear as to how these coefficients were arrived at, but he suggests that the reflection coefficient for any paper, colour, or texture can be ascertained with sufficient accuracy for all practical purposes by measuring its apparent surface brightness in a direction normal to its surface as compared with that of white blotting paper, a Holograph Lumeter standard card, or any other suitable standard under the same illumination. The reflection coefficient of some papers appears to vary with the angle of reflection, but this is a case where half a loaf is preferable to starvation, and it is better to start with data which may require subsequent refinement as our knowledge increases than not to start at all.

C.P. Distribution Curves.—Candle-power curves of lamps and shades are not used at the present time to anything like the extent which they ought to be, and to which they would be were it possible for the lighting expert to obtain them readily for any combination of lamp and shade. It is from the c.p.

curve, and from it alone, that he can determine what direct flux of light will fall upon any given position even if he neglect the enhancing effect of walls and ceilings.

It is, however, no small matter to place a lamp and its shade upon a photometer bench and test it at all angles; and if it were possible to obtain a fully accurate curve from a lamp and shade either in actual use or fixed temporarily to a point, doubtless they would be used more largely. The author suggests the following method as being simple and sufficiently accurate for practical purposes.

To one end of a light wood lath is fixed a vertical bent plate of tin blackened and marked in degrees and carrying a plumb bob so that the angle with the horizon at which the rod is being held can be at once read off. Part of the tin plate is bent at right angles to the direction of the lath, and a plate of known whiteness—white blotting paper or a Lumeter test-plate—is attached by means of a rubber band. A blackened brown paper screen is held or hung behind the lamp and shade to be tested, the lath is held with the point just touching the lamp. The illumination in foot-candles produced on the test-plate is then read, with the lath held at different angles. This illumination (except in a blackened room) is produced partly by the lamp and partly by reflection from surroundings, or even by other lamps. The rays coming from the lamp alone are isolated from the extraneous light as follows. A small black screen of such a size as to just screen all the rays from the lamp and shade, but nothing else, is held in a notch in the lath, and a reading taken under these conditions represents the extraneous light only. The difference between the two represents the direct rays from the lamp and shade only. The net foot-candle readings divided by the square of the length of the lath used to give the required candle-power at various angles. The method seems somewhat rough, but it is very handy, and gives curves which approximate very closely to those obtained in the laboratory. It also enables curves to be measured for gas mantles, oil lamps, wax candles, &c., which are very difficult to obtain in any other way. By its means the difference caused by various patterns of shades can be quickly tested; and it should not be forgotten that many people who are only confused by figures and technical terms will readily grasp the meaning of a curve.

Equipped with the distribution curve of the particular light unit or units which it is proposed to adopt, and the re-

MODERN EUROPEAN ARCHITECTURE.
GERMANY.[From *Moderne Bauformen*.

DETAIL FROM HOUSE AT WACHWITZ.—Professor WILHELM KREIS, Architect.

reflection coefficient of the wall and ceiling papers or colours the installing engineer can say what direct flux of light will fall upon the walls, ceiling, and table plane of any room, and what will be the surface brightness due to that flux. All he requires to know is what increase in the flux will be due to reflection.

A very exhaustive series of tests on this point was carried out by Drs. Sharp and Millar, in America last year in a room about 12 ft. by 12 ft. by 10 ft. high, but with a powerful pendant lamp near the ceiling. The walls were "greyish-white," the ceiling white, and the floor brown linoleum. The results obtained will well repay study. (See Trans. American Soc. Ill. Eng., May, 1910.) Briefly summarised they are as follows: the lamp used directed an average flux of 1.20 foot-candles on to the ceiling, 2.50 foot-candles on to the walls, and 1.25 foot-candles on to a table plane 3 ft. from the floor.

It was found that the total effect of reflection and counter reflection from walls and ceilings under these conditions was equivalent to an average secondary flux of 1.90 foot-candles on the walls, 0.65 foot-candles on the ceiling, whilst the illumination on the table plane was doubled to 2.5 foot-candles.

This test, excellent as it is, gives only the results for one size of room, one scheme of colour, and one scheme of lighting. What we require are more numerous (if less detailed) results obtained in a number of rooms of different sizes with different schemes of colour and with varying proportions of light thrown upon walls, ceilings, and floor respectively by means of light units at varying heights with various shades.

Tests of Effects of Wall Papers in a given Interior.—The author hoped to have been in a position to submit to the Society the results of a number of such tests of different rooms. Although, owing to illness, he has been unable to complete them, a description of their scope might possibly induce others to collect data on the same or better lines.

The method adopted was to divide the floor, walls, and ceilings into a number of equal rectangles. The c.p. distribution curves of the lamps having been measured as before described, readings were then taken with an illumination photometer of the illumination received by a detached test-plate placed in the centre of each rectangle. Then another series of readings was taken with a small black screen placed about halfway between the test-plate and each lamp, so as to

just cut out the direct lamp rays whilst obliterating as little as possible of the light reflected from the ceiling. This second set of readings isolates the increase due to all reflections and counter reflections for that size of room and colour of wall and ceiling surfaces, and the difference between the sets of readings should equal the direct flux as calculated from the c.p. curves.

A room about 19 ft. by 12 ft. 3 in. by 10 ft., papered with very dull red paper possessing a coefficient of reflection of only about 11½ per cent. was temporarily fitted with two 35 Watt Mazda pendant lamps and tested with different Holophane shades varying the incidence of the light rays. The walls were then altered from such an approximately worst condition to an approximately best by covering them temporarily with white lining paper with a coefficient of reflection of 100 per cent., and similar readings were taken. It is proposed to compare the results thus obtained with a series of tests which, I understand, is now being made by Holophane, Ltd., in a smaller room hung with a series of different coloured papers. The Holophane tests should be of great value when completed. As far as the author's results have been carried it would appear that under average conditions the increase of flux of illumination on walls by reflection tends to vary somewhere from between 50 per cent. and 70 per cent. with white wall paper, down to between 20 per cent. and 30 per cent. with very dark papers. The increase of flux of illumination on white ceilings appears to be in about the same proportion as on the wall papers to which they are adjacent. The increased illumination on table planes in foot-candles appears to be about a mean between the increases in foot-candles of the flux on the walls and on the ceiling.

These results are, of course, very approximate, and they are only put forward as practical terms in which it may be found possible to express the results of future investigation.

GLOUCESTERSHIRE ARCHITECTURAL
ASSOCIATION.

MR. WALTER B. WOOD (President) occupied the chair at a meeting of the Gloucestershire Architectural Association, held at the Northgate Mansions on Thursday, April 27, when a number of members attended to hear a lecture by Mr. A. Saxon Snell, F.R.I.B.A., entitled "Baths

and Wash-houses." Mr. Snell, in the course of an exceedingly interesting and instructive lecture, pictured the ideal baths of the future, which should include a lounge, gymnasium, library, picture gallery, &c., after the manner of the Roman baths of old. This, he said, might appear visionary, but in view of the increasing interest that was now taken in municipal enterprise was quite within the bounds of possibility. The lecturer dealt exhaustively with the question of planning of public baths, and pointed out that in many cases insufficient attention was given to the choice of a site, an awkward site often resulting in costly planning. Although great improvements in planning baths had been made during the past twenty or thirty years, the lecturer thought that there was room for further improvement, but that in many respects the designer's hands were still tied by popular prejudice. This handicap, he hoped, would disappear in time. Mr. Snell mentioned that he had that day visited the Gloucester Public Baths, and remarked that they were among the most conveniently and economically planned baths he knew. At the close of his lecture Mr. Snell exhibited and explained numerous plans of baths and wash-houses carried out by himself and other architects, including plans of the Gloucester Baths (kindly lent by the architect, Mr. J. Fletcher Trew). An interesting discussion followed, in which Messrs. W. B. Wood, Fletcher Trew, H. W. Chatters, R. S. Phillips, and H. S. Davis took part. The meeting closed with a hearty vote of thanks to the lecturer. On Friday afternoon members visited the new Ladies' College baths at Cheltenham, by kind invitation of Mr. Snell, the architect.

COMPETITION NEWS.

BROUGHTY FERRY.—Competitive plans for the erection of a new school on the Whinny Brae, to accommodate 810 pupils, have been considered by the School Board of Broughty Ferry. There were eight competitors, and from these a selection of three was made—namely, plans by Mr. J. H. Langlands, architect, Dundee; by Messrs. Maclaren, Sons & Soutar, Dundee; and by Messrs. Charles Ower & Co., Dundee. By 5 to 2 in a final vote between Messrs. Maclaren and Mr. Langlands, the plan of Mr. Langlands was chosen, subject to the approval of the Education Department. The new school will provide accommodation for 810 pupils, and will enable the whole of the supplementary classes to be taught under one roof. The chief elevation will face east and west. The whole of the classrooms are placed so that the light falls from the left of the pupil, with free wall space for the blackboards facing them. Instead of one central hall, the plan includes two halls, each 54 ft. 6 by 27 ft., one on the ground floor and another on the first floor, the light coming from the east. As these halls will be used for physical drill, or possibly gymnastics, pits in the floors of each provide accommodation for storage of drill apparatus, so that when needed the halls could be cleared for assemblies of pupils or others. The rooms for the teaching of cookery and laundry are on the second floor, over the halls; while on the ground floor, at the north end of the building, with access from the corridor, the large room for manual instruction is placed, a feature of this room being the provision of a shoot, with fireproof door, by which shavings and other suitable waste products may easily find their way direct to the heating chamber to serve as fuel. The school will have a mechanical air supply and indirect heating. By an electrically-propelled fan air will be drawn through a special inlet and pressed into the main air trunk under the ground floor corridor, and from this trunk a distinct flue up to each classroom will be provided, with outlet flues therefrom to the roof trunks. No heating of air takes place underground, the low pressure steam radiator necessary to warm the air for each room being placed in its particular inlet flue above the floor level. The fresh air on being admitted at the main inlet is passed through a fine mist water spray, which moistens it, and at the same time carries down smuts and impurities. The estimated cost of the building is 9104½, with 500½ to add for architect's and measurer's fees; while the figure for Messrs. Maclaren's design was 9368½, exclusive of architects' fees, and of Messrs. Ower's 9499½.

DUNFERMLINE.—The competitive plans for the women's institute proposed to be erected by the Carnegie Dunfermline Trust have been assessed by Messrs. Sidney Mitchell & Wilson, architects, Edinburgh, and they have awarded the premiums as follow:—1 (20½), Messrs. John Melvin & Sons, Alloa; (2) (15½), Mr. John Watson, Rutland Street, Edinburgh; 3 and 4 (10½) Mr. James Lindsay, West George Street, Glasgow, and Mr. Archibald Welsh, 253 High Street, Kirk-

caldy. The committee of the Trustees decided that the most suitable plan was that of the last-named architect. The cost of the institution will be 7,500½. The institute will have a parlour for social purposes, table games, &c., a reading and writing room, three class-rooms to accommodate 40, and a hall with seating provision for 360.

LIVERPOOL.—Prizes of 20½, 10½, and 5½ given by Mr. W. H. Lever for designs for a group of cottages suitable for Port Sunlight have been awarded to Messrs. R. F. Dodd, W. E. Davies, and A. R. Sykes, second year students of the School of Architecture in connection with the University of Liverpool.



[The Editor will not be responsible for the opinions expressed by Correspondents.]

To Save the Crystal Palace.

SIR,—The Crystal Palace is now definitely and irretrievably to be sold. The decision of the Judge ordering the sale was upheld by the Court of Appeal on April 25. Its sale is now as certain as that the sun will rise to-morrow. The question now is: Who shall purchase the Palace? Setting aside all alternatives, good, bad or indifferent, my Council urges that scheme which has been spoken of with remarkable coincidental unanimity by writers from several parts of the world as "the finest project ever placed before the British public"; which has the active support of literally hundreds of British newspapers; and the support of thousands of the British and Colonial public, and a large and influential body of titled gentlemen—namely, The King Edward National Memorial.

I now beg of all readers to consider the extreme urgency of the matter. Several hundred thousand pounds are needed at once as a minimum if the Palace is to be saved. Given this, we can purchase the Palace and secure it to the nation and Empire. All the more important banks throughout the country have undertaken to receive subscriptions, and have subscription lists. A great many newspapers and technical papers are doing likewise; and I want everyone who reads this paper to subscribe, and at once. *Bis dat qui cito dat.* The Palace cannot be purchased "by arrangement." It has to be a cash transaction. Let all promises (of which we have received hundreds) be forthwith transmuted, and all sympathy materialised into a precious metal offering, once and for all—and for ever the Palace is the possession and meeting-place of the nation and the Empire, shining ever in our homeland's sunlight a welcome to every British son—farborn and near—to the memory of the King beloved and for his peoples' good. We need gifts from 100,000½ down to 1s. All will be gratefully acknowledged in any daily or weekly paper selected by the donor. Contributions may be sent to any newspaper editor, or to any bank, or to the Earl of Kinnoull, the King Edward National Memorial Offices, 26 Shaftesbury Avenue, Piccadilly, London, W., from which address all particulars can be obtained.

Every subscriber of one guinea and upwards within the next month for England, and three months for American, and six months for Australian and New Zealand Dominions and Colonies, will receive a Life Free Admission ticket to the Crystal Palace.

The promotion is purely gratuitous by all parties, and in the event of our not being able to purchase the Palace all subscriptions will be returned.

TENTERDEN.

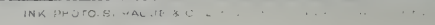
April 26, 1911.

St. Paul's Cathedral.

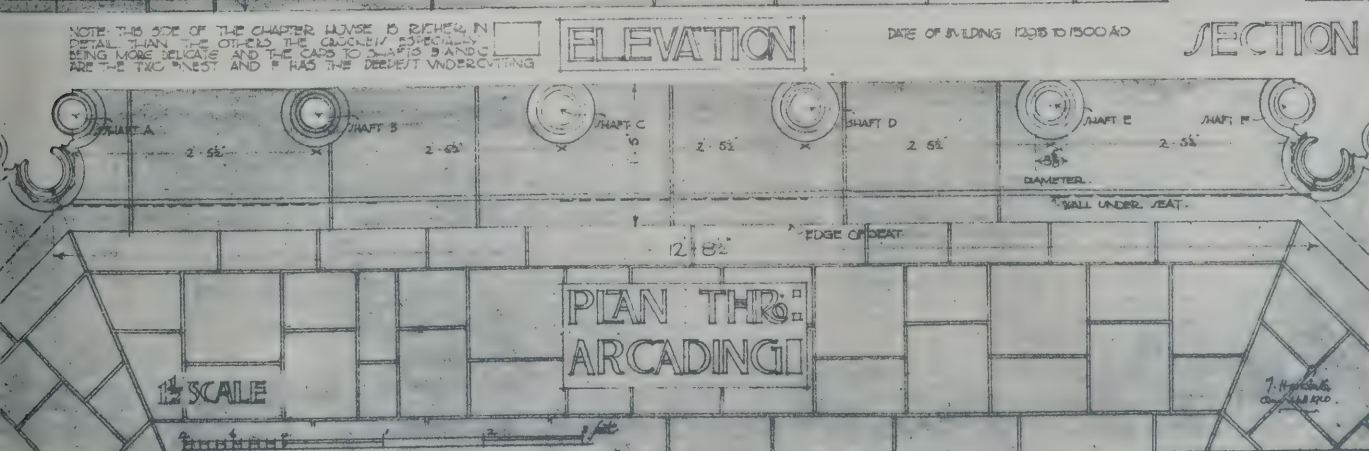
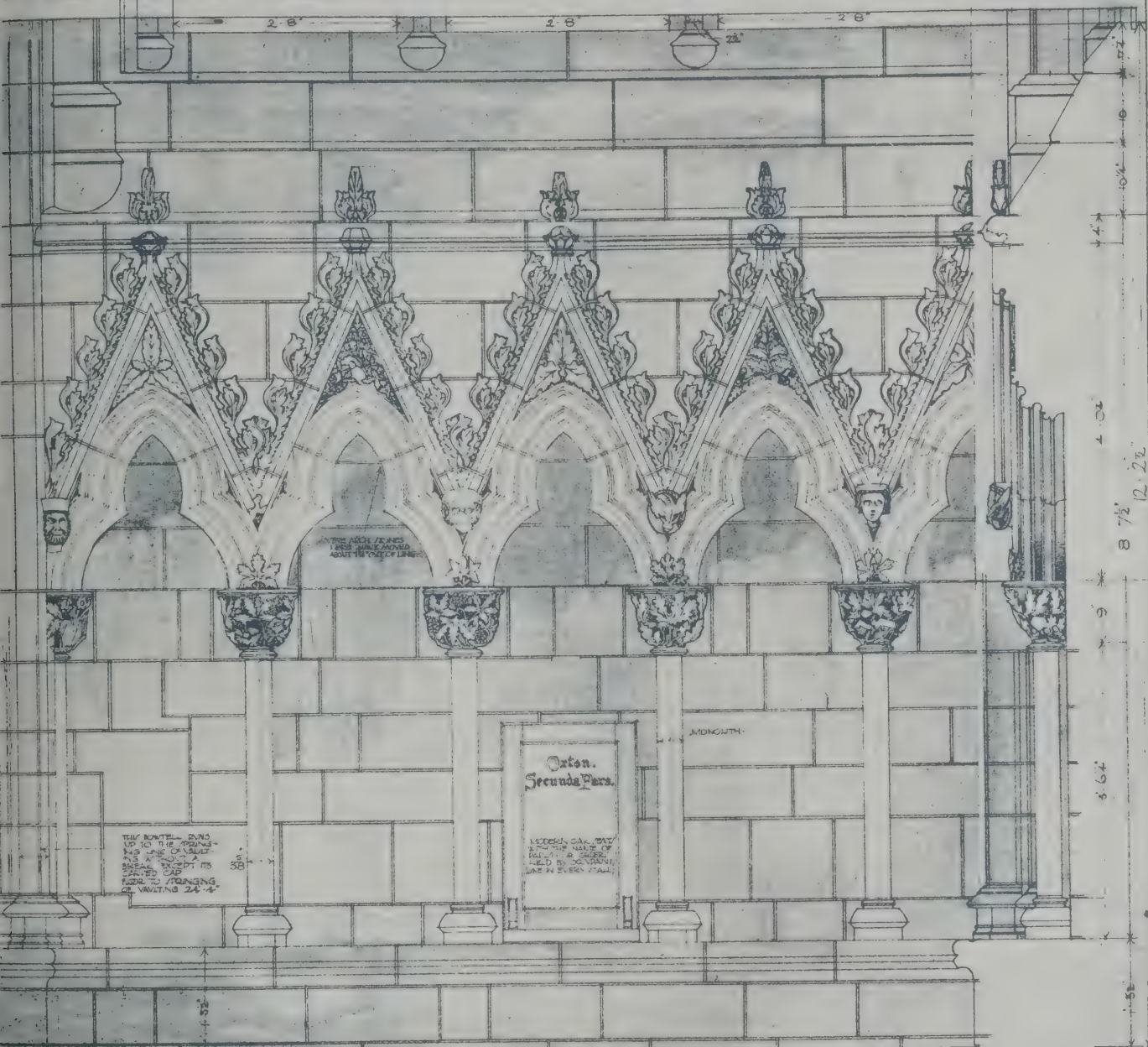
SIR,—In your issue of April 28 you say the Bath Stone Firms exhibited at the Building Trades Exhibition "a sample stone from the Wakeham district for St. Paul's Cathedral." Can they, or anyone, give any reason or authority for saying St. Paul's was built of stone from (or near) "the Wakeham district"?—Yours obediently,

ENQUIRER.

THE King and Queen have graciously intimated their acceptance of an armoire which is being carved by the students of the School of Art Wood-Carving, South Kensington, as a Coronation gift.



DETAIL OF ARCADING ON NORTH WALL OF THE CHAPTER HOUSE SOUTHWELL MINSTER



DRAWINGS SUBMITTED FOR THE PUGIN STUDENTSHIP, 1911.

By Mr. T. H. WHITTAKER.



The Architect, May 5th 1911.



THE PHOTOGRAPH BY SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

CATHEDRAL SERIES, No. 668.—ELY: NORTH CHOIR AISLE, THROUGH DOORWAY OF BISHOP ALCOCK'S CHAPEL

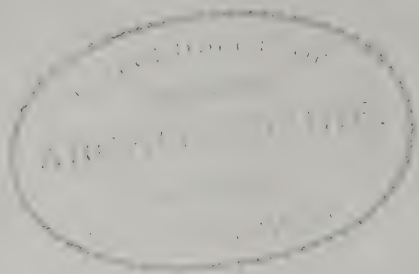


The Architect, May 5th 1911.



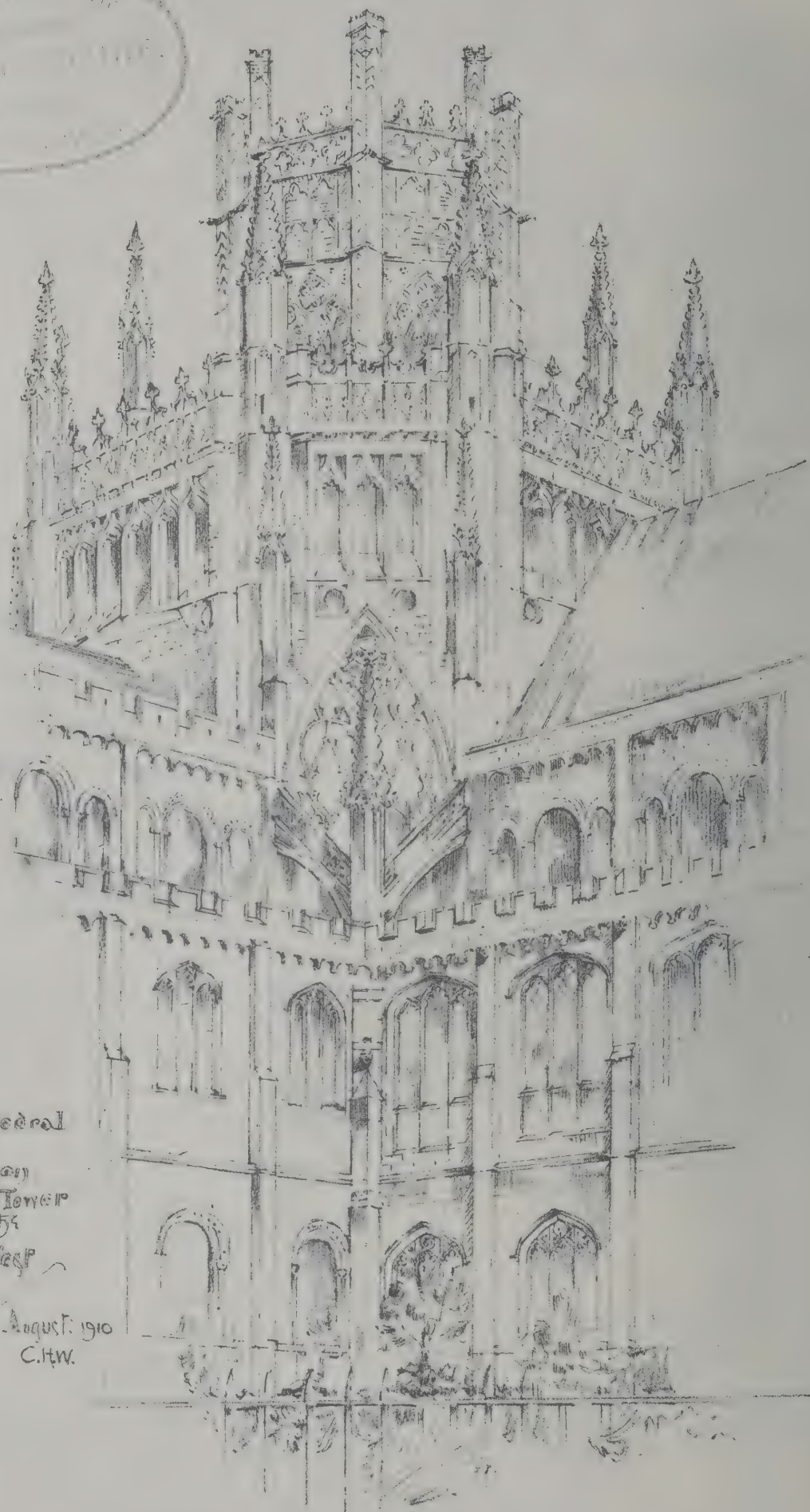
"INK PHOTO" SPEAGUE & CO. LTD. 4 & 5, EAST HARDING STREET FETTER LANE E.C.

CATHEDRAL SERIES. No. 669.—ELY: NORTH CHOIR AISLE, LOOKING EASTWARDS.



Ely Cathedral
Octagon
Tower
from SE
North West

August 1910
C.H.W.



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TRAVELLING STUDENTSHIP DRAWING BY MR. CHARLES HENRY WALSH.

"THE ARCHITECT" STUDENTS' SKETCHING & MEASURING CLUB.



ELY
CATHEDRAL

View from Retrochoir.
looking to
North East

August 1910
C.H.W.

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TRAVELLING STUDENTSHIP DRAWING BY MR. CHARLES HENRY WALSH.

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The Architect.

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FORTHCOMING EVENTS.

Saturday, May 13.

Royal Institute of British Architects: Final date of application for the Final and Special Examination to be held June 29—July 7.

Tuesday, May 16.

East India Association: Mr. John Begg (consulting architect to the Government of India) on "The Architect in India." At Caxton Hall, Westminster.

Wednesday, May 17.

Institute of Sanitary Engineers: Mr. G. W. Chilvers on "The Mechanics of Municipal and Sanitary Engineering."

Thursday, May 18.

Incorporated Church Building Society: Annual General Court at the Church House, Westminster.

Saturday, May 20.

Edinburgh Architectural Association: Visit to Aberdour and neighbourhood.

THE ROYAL ACADEMY EXHIBITION.—II.

CONTINUING our inspection of the ecclesiastical work we notice Mr. ROBERT H. CUNLIFFE's design for St. James's Parish Church, Accrington (1,601), as an example of elaborate, fussy and fidgety treatment of perpendicular detail with flying buttresses and many projections. Messrs. JOHN WILLS & SONS' "Design for Methodist Church and Schools" (1,588) is an instance of the elaborate phase of Perpendicular which seems to be the favourite style in vogue at present amongst the conformist church communities. Mr. HERBERT G. BERSON's "Baptist Meeting House, Chorley Wood" (1,615), shows another type of modern ecclesiastical design, set to harmonise with the rough-cast fashion of domestic work. This is shown in a clever coloured drawing that makes the most of its rough-cast and green slate. Mr. GERALD COGSWELL's "Proposed District Church to Anne's, Highgate," is quietly toned, apparently in black, represented in a pleasant grey water-colour drawing that rather disguises the material.

If some of the designs that are shown in clever and effective water-colours look prettier than they will probably be in realisation, the same cannot be said of such work as Mr. WILLIAM DAVIDSON's drawing of the proposed restoration of the Church of St. Margaret, Wotton, Norfolk (1,597), where a really quiet and restful design has given to it a false skittishness by an unfortunately flickering pen-and-ink drawing. How much is "restoration" is not clear, but the salient feature, a red western tower, is presumably due to the original. Another design that suffers from a poor presentment in pen and ink is Mr. WALTER TAPPER's "School Chapel, Perth, West Australia: South-west View" (1,594), a good, simple design that is not fairly treated by the draughtsman.

Mr. HUBERT C. CORLETTE's design for "New Rectory, Hornsey Parish Church" (1,626), is shown in a coloured pencil elevation which pictorially suffers from a rather unpleasant blue background to the figure objects. The iconography is interesting as a struggle with restricted doctrinal expression. Although the drawing of "Congregational Church and Schools, Manchester" (1,612), by Messrs. J. H. FRANCE & H. B. AYCOCK, is skied, it shows an effectively-grouped design even if there may be some undue straining to gain the effect. Considerations of cost have possibly limited the height of the central tower to the level of the ridge of nave and transepts, but the result is pleasing. Messrs. KELLY & DICKIE's "Church of St. Saviour, Lewism" (1,618), with a simple Italian type of building whose chief feature is the wide projection of the eaves, is very refreshing after the many examples of over-elaboration of grouping and detail that is largely prevalent

amongst the churches and chapels in this year's Academy. Messrs. JOHN WILLS & SONS have succeeded in avoiding over-richness on the one hand and undue severity on the other with their design for "Proposed Baptist Church, Eltham Park" (1,629), a brick building with Decorated tracery modified by the modern through mullion. A tall square tower, almost a campanile in proportion, is a striking feature of the design. Quite a different kind of tower is seen in Mr. WALTER PLANCK's "Church of the Second Congregation, Belfast" (1,631), a big, squat structure that is equally striking and would be even more satisfactory if its sturdy mass were not spoilt by thin angle buttresses and pinnacles tied to the tower angle with little flying arches. A good Perpendicular east window gives promise of a generally satisfactory design.

A somewhat unusual feature is introduced in Messrs. HEALING & OVERBURY's "Design for New Church of St. Catherine, Wotton, Gloucester" (1,633), of which an exterior coloured perspective view is shown. This feature is a south porch at the east end of the nave. Presumably the main entrance is through the western tower and the south porch is primarily an exit. The gain in composition is valuable although the departure from the usual position to which we have become accustomed by association strikes us as somewhat odd. Messrs. H. R. & B. A. POULTER's interior view of "St. Andrew's Church, Frimley" (1,630), shows an attempt at small cost by the use of timber roofing and posts to make a nave and aisles of a wide space enclosed by comparatively low walls. Professor BERESFORD PITE's design for the "Cathedral Church of St. Paul, Namirembe, Uganda" (1,651), is a somewhat peculiar conception of domed architecture that is marked by originality and would look a great deal better in execution than in the drawing.

Sir ASTON WEBB, R.A., is represented in this year's Academy by one drawing only, a coloured elevation and plans of the "Imperial College of Science and Technology: New Buildings, in Prince Consort Road, South Kensington, for the Royal School of Mines and Engineering Extension of the City and Guilds of London Institute" (1,542), which will be a notable addition to the collection of Government buildings in South Kensington. Mr. JOHN BELCHER, R.A., and Mr. T. G. JACKSON, R.A., do not exhibit this year, and Mr. R. NORMAN SHAW, as a retired Royal Academician, naturally does not contribute.

Of public buildings there are comparatively few drawings in this year's Academy, but domestic architecture bulks largely and comprises many interesting examples of the work of our leading men in this department, as well of those lower down on the ladder of fame who are not necessarily less devoid of ability. These sections of the show we shall deal with in future articles.

ROMFORD GARDEN SUBURB.

GARDEN suburbs and garden cities are springing up all over the land like mushrooms, but the nearest approach to the rapidity of growth of JONAH'S gourd is to be seen in the Gidea Park estate, which is now in process of transformation into a garden suburb of Romford, where some 140 houses have since last September arrived at various stages of completion, from a fully-furnished house ready for occupation to half-built brick walls which can hardly be finished and roofed in before the opening day of the Town Planning and Modern House and Cottage Exhibition, fixed for June 1.

The remarkable feature about this collection of houses is that it is an architectural competition, representing the efforts of a hundred architects to win a first prize of a gold medal and 250*l.*, or a second prize of 100*l.* for the design of a detached house to cost not more than 500*l.*, or to win a first prize of a gold medal and 200*l.* or a second prize of 100*l.* for the design of a detached cottage to cost 375*l.* The competing architects have either put up their own capital or found clients to provide capital for the erection of the houses, so that the competitive designs might be expressed in solid bricks and mortar, timber and stone, slate and tile rather than delineated on paper. Thus the promoters of the exhibition and the owners of the land have cleverly induced a number of architects and their friends to speculate to the tune of 60,000*l.* in the development of a new building estate.

This estate has natural beauties that should prove attractive to the general public, but to this has been added the further attraction of the best skill of the hundred competing architects, the *dernier cri* in artistic domestic design. We hope for the sake of the architects that the public will be sufficiently attracted to relieve the speculators from disappointment and embarrassment, but there is another feature in the case which may prove deterrent to shrewd purchasers.

We were informed at the private view last week that the purchase price of a 500*l.* house and the freehold land on which it stands would be about 750*l.*, according to the size of the plot. By the conditions of the competition the 500*l.* cost of a house includes builder's profit, architect's fee, and fencing, so the remaining 250*l.* represents cost of the land, lay-out of garden and any legal costs. Putting these two latter items at the outside figure of 50*l.*, we have 200*l.* for the price of the land, and as there are six houses to the acre we arrive at 1,200*l.* an acre as the figure on which the calculations of the owners of the land are based, a fairly high one for land in Essex east of Romford. Will the house-buying public swallow the bait?

It would be unfair at the present time to enter into a detailed criticism of the exhibition, as no catalogue is yet available, and many of the houses are not labelled or even completed, but we can truly characterise the results already achieved as the most remarkable exposition of the ability of English architects in domestic design that has ever been seen. Not only is there skilful planning of a very high order but an immensity of artistic ability and thought.

Needless to say, there are no two houses alike, except in one or two instances where these are intended to form a group in composition, but there is also an infinite variety of treatment. True, there are some examples of the rough-cast and green slate type, with which we are now almost nauseated, but these are in the decided minority, and perhaps the most outstanding feature of the exhibition as regards artistic design is the thought devoted to the use of common everyday material in novel applications for the sake of artistic expression.

Without a catalogue we are unable to give the names of all the architects represented, but amongst them are some well known in domestic work as designers of the "smallish house"—Mr. M. H. BAILLIE SCOTT, Mr. GEOFFRY LUCAS, Messrs. FORBES & TATE, Messrs. FAIR & MEYER, Messrs. WARWICK & HALL.

In connection with the Romford Garden Suburb there has been held a competition in town planning for a portion of the Gidea Park estate as yet not laid out and separated by the golf links from that on which the 140 competitive houses are built. The first prize of 100*l.* has been won by Messrs. GIBSON & DANN, the second prize of 50*l.* by Mr. GEOFFRY LUCAS, and the design of Mr. OSWALD MILNE has been highly commended.

Many of the competitors have adopted the system that proved successful in the Ruislip Manor competition and laid out the land in pretty patterns, which treatment has here the greater justification as the gradients are fairly easy, but this type of plan has been ignored by the judges. The winning design has a well-laid-out civic centre with a public hall, places of worship for both the Established and the Free Churches, cottage hospital and technical schools. Leading to this centre is a good shopping centre, and the approach to the railway station is direct and convenient. In the residential portions of the plan, the closed vista and the enclosed square are largely adopted.

Mr. GEOFFRY LUCAS has also a good civic centre though not so complete perhaps as in the first prize plan, the main feature of his arrangement being a grand avenue leading from the golf links, and around which are the public buildings. The important matter of approach to the railway station is also not quite so well handled. Mr. MILNE's design is very similar in disposition to that of Mr. LUCAS.

NOTES AND COMMENTS.

The preamble of the Bill of the Corporation of the City of London for the erection of St. Paul's Bridge has been passed by the Committee of the House of Commons, and in view of the evidence given before the Committee we cannot be surprised at the approval given to the plan proposed by the Corporation. Whether the evidence which necessarily turned very much on the personal opinion of the witnesses, was reliable is quite another matter. Sir ALEXANDER STENNING said that the Corporation plan would open up a very fine view of the Cathedral—and we agree with him—but no one said that any other plan would open up a better.

SIR WILLIAM NOTT-BOWER, of course, as the representative of modern police methods, advocated the scheme of furnishing a direct intersection of north and south traffic with east and west traffic, but no one gave evidence as to the amount of traffic that goes from south to west, south to east, north to west, or north to east. As our office windows overlook one of the busiest intersections in London of north and south with east and west routes, we have this view of the traffic question daily before our eyes and we cannot help realising the public danger that results from these divergent streams. Our chiefs of Metropolitan Police have not yet begun to dream of a safer method of dealing with cross traffic than the direct right-angle junction. Continental town-planning experts have well considered the question, and have shown that there are better and safer methods of dealing with the traffic that meets in streams from north, east, south and west than that intended in the Corporation plan for St. Paul's Bridge.

If the Corporation and the House of Commons prefer Sir ALEXANDER STENNING's fine view of St. Paul's to that of Professor PITE and other artists, we can only pity their taste, but from the point of view of the public safety we can confidently affirm that the Corporation are making a terrible mistake in the arrangement they propose of road traffic. We say of road traffic. We recognise that for the purpose of a direct tramway route from the Angel to the Elephant and Castle the Corporation's plan is admirable.

BUT is a direct tramway route from north to south the *summum bonum* of London traffic? First of all it benefits passengers only, not goods. Goods we recognise want to go from north to south, but is not passenger traffic to and from the City almost entirely radial? How many passengers travel by the City and South London tube from Clapham and Stockwell to the Angel and Euston? We know that this line is a great convenience to a few, but with some personal experience we are aware that there is comparatively a small number of threepenny tickets issued on the line. The real truth is that there is no great necessity to provide facilities for through passenger traffic by tramway from north and south. When this truth is realised the actual *raison d'être* for the Corporation's plan vanishes entirely. We are quite aware that tramways are not in the Bill, but it is perfectly clear that the north and south tramway route is at the bottom of the tenacity with which the Corporation's scheme is being pushed. Plus, of course, the *amour propre* of the projectors.

THE evidence in favour of the Corporation's plan was well presented, the evidence against was without advocates. The opposition was entirely that of financial and commercial interests concerned, and this opposition was tactfully squared. Nobody put up any money to fight the cause of the public safety or the æsthetic amenities of London; therefore, on the evidence, the Committee could scarcely do other than pass the preamble as proved. So the safety and beauty of London must go to the wall.

IN a discussion on "The development of the suburbs of the city," in connection with the provincial sessional meeting of the Royal Sanitary Institute, held in Liverpool on May 5, Mr. H. D. SEARLES-WOOD, Vice-Chairman of the Council of the Institute, presiding, Mr. J. A. BRODIE, city engineer of Liverpool, laid stress on the importance of laying out the main roads leading to the suburbs of a city of ample width, 80 feet rather than 50 feet. Neglect of this had cost the city of Liverpool during the past fifteen years $1\frac{1}{4}$ millions sterling, expended on providing main lines of communication, and without such widening the present system of quick transport traffic would have been impossible. As a result of the experience gained, the 1908 Act was passed, by which land for widening up to 80 feet could be obtained free of cost from landowners where the land was still unbuilt upon. A rather important question remained to be settled as to how the funds to cover the cost of such works are to be provided in the districts outside the city.

THE satisfactory planning of the town consisted largely in the proper arrangement of the main lines of traffic in the first instance, and a lot of detail could be left to be worked out at a later date. That was the plan adopted in connection with the new streets that were being made to the outskirts of Liverpool in Childwall Road, Woolton Road, and Thingwall Road. Prescott Road and the road beyond Wavertree Clock Tower would also no doubt be constructed 80 feet. They were dividing their areas into something like half-mile squares or rectangles. He believed that if the main lines of communication were properly provided in the first instance, the minimum of street works might be permitted. He thought it was wise that so much of the permanent work as was actually completed should be done in first-rate style and with first-rate materials, so that the maintenance, if it became afterwards a charge on the public authority, might be kept as low as possible.

SUBSEQUENT speakers endorsed the views which Mr. BRODIE had expressed and voiced their approval of the work he had done around Liverpool in carrying out the principles he enunciated. There is no doubt that one of the first steps to be considered by municipal authorities in adopting the provisions of the Housing and Town Planning Act for the lay-out of suburban areas is the necessity of adequate main roads to reach the suburbs.

SOME of the clergy of Yorkshire have been discussing at Hull the question of the fire insurance of churches. This bristles with many difficulties, first to decide on what basis of value a church should be insured, second how the cost of premiums is to be met, and then what can be done if the lay rector refuses or omits to insure the chancel. The discussion, under the chairmanship of Archdeacon MACKARNES, did not satisfactorily clear up the difficulties.

By the generosity of Mr. WATSON FOTHERGILL, one of the architects of Nottingham, a statue of RICHARD PARKES BONINGTON, one of the most notable men Nottingham claims to have produced, was formally unveiled in the grounds of the School of Art, Nottingham, on May 3, in the presence of the Mayor and Sheriff and representatives of the civic and art interests of the city.

THE statue, which has been executed by Mr. POMEROY, A.R.A., from a block of Carrara marble, faces the Waverley Street entrance. The statue is 6 ft. 6 in. in height (BONINGTON himself was 6 ft.), and represents the artist with palette and brush in hand. It is mounted on a big square pedestal of granite and surmounted with a handsome domed canopy, designed by Mr. FOTHERGILL.

MR. FOTHERGILL, who is of a Mansfield family, went to reside in Nottingham some fifty years ago, and has practised as an architect in the city for the greater part of the subsequent period. Keenly interested in art, and particularly in the art associations of his adopted city, it occurred to Mr. FOTHERGILL that the memory of perhaps the greatest painter born in the locality ought to be perpetuated in the city, and so he offered to the City Council to provide the monument.

RICHARD PARKES BONINGTON was born 109 years ago at Arnold, but he received his early education in Nottingham, where his father was engaged as a drawing master and designer. When RICHARD was fourteen years of age his family moved to Calais, where his father assisted to set up one of the first lace machines. He desired his son to follow the lace trade also, but the boy had already attained great proficiency as a painter, and devoted the whole of his time to it. Indeed, when, at the age of nineteen, young BONINGTON left Calais and went to Paris, he was received as one who had already made his name in art. From that time until his death at the age of twenty-six, BONINGTON was a prolific painter. The great majority of his pictures, however, have remained in France, though thirty-five of them form part of the Wallace Collection in London.

IN the Nottingham Castle galleries there are four or five examples of BONINGTON's work in oils, but not a single water-colour. They include "St. Bertin's Abbey at St. Omar," "The Piazza at Venice," "The Old Castle at Dieppe," and the figure subject "Meditation." Mr. FOTHERGILL possesses a couple of the artist's pictures, one an oil painting of "FRANCIS I. and his Sister," which he obtained a short time ago from the Staats Forbes Collection (the original sketch for which is in the Wallace Collection), and a water-colour of Antwerp Cathedral.

THE *Art Journal*, in illustration of an article on "MILTON and Art," by LEWIS LUSK, has an etching of Chalfont St. Giles by Mr. W. MONK, R.E., and also reproductions of other drawings by Mr. MONK of MILTON's "Pretty Box" at Chalfont St. Giles and the Church of St. Giles, Cripplegate, which are good examples of this artist's rendering of architectural subjects. An interesting article on WENCESLAUS HOLLAR, "A Complete Etcher," by LUKE TAYLOR, R.E., is of special interest, with numerous illustrations of his work, architectural and other. Mr. C. LEWIS HIND continues his series of articles on "The Glamour of Landscape," referring now to the work of BELLINI, MANTEGNA, VERROCHIO, DA VINCI, and other fifteenth century Italian painters.

THE *Connoisseur*, in an article on Sherborne House, Gloucester, gives views of the mansion as well as of several of the notable portraits that it contains. Dr. PHILIP NELSON continues his description of the Mediæval Ivories in the Liverpool Museum. Mr. EGAN MEW includes with his description of Japanese Old Lacquer some remarkably fine illustrations. Mr. WALTER CHURCHER describes his collection of Old Pewter.

ARCHITECTURE AT THE PARIS SALON.

THE Salon which has just opened does not differ as far as the architectural exhibits are concerned, from many previous exhibitions, but, as always, it impresses by its striking differences to the little room devoted to architecture at the Royal Academy. The Salon, if anything, errs on the side of providing too much space, and many of the drawings are really not worthy of being hung in an exhibition.

On the other hand, the farce of the one small room at the Royal Academy to exhibit the year's work in architecture must be apparent to all, and will surely eventually result in the Royal Institute of British Architects instituting an annual exhibition in their own galleries which we firmly believe would, if managed judiciously, be an unqualified success, in view of the greater interest taken in architecture by the public generally, owing to the increase of travelling facilities and the lectures which have been given of late in the museums on the subject.

The Salon has fourteen large galleries, each one of which is larger than the apartment devoted to architecture at the Royal Academy. One thing which continually strikes one is the great care with which architects state whose pupils they are, in spite of the influence of the Ecole des Beaux-Arts.

It will be convenient to deal with the drawings according to subjects.

Ecclesiastical work appears at a very low ebb in France. The most important exhibit is that of M. BRUNET who sends eleven large strainers of a modern Romanesque church at Coulommiers (Seine-et-Marne). It is a design in the latest manner with ferro-concrete roof, and the drawings are most complete, showing the foundation plans and structural details, but the design lacks any artistic feeling and makes one marvel at the sad results produced by a studentship at the Ecole. A model of the vaulting of the domical elliptical bays over the nave is also shown.

The weak wiry looking design for a church by M. MELAND upon ground intersected by streets at different levels, and the cartoons for stained glass shown by M. LACOSTE indicate that church architecture is practically dead, and that it is to England and America that we must turn for development in this direction.

Monumental architecture is also but poorly represented. M. COCHET shows his design for a monument in the Byzantine style, so much favoured for this purpose, in the Cemetery of Père-Lachaise; M. RECOURA, a pupil of M. PASCAL, his design for the tomb of ERNEST HERBERT, worked out by a fine water-colour drawing with central sculptured sarcophagus; and M. FAUQUET sends his weak Gothic sketch for a national monument to JOAN OF ARC at Rouen.

If the education given at the Ecole des Beaux-Arts produces such stuff as this, we trust that the Architectural Association will long continue to instruct the rising generation on the lines of English tradition and not be led away, as in a certain town in the North of England, to ape continental ideas.

Domestic architecture is in a still worse plight in France and can bear no comparison to that of England or America.

Some half-dozen exhibits may be mentioned:—M. GIRARD's design for the house of an amateur fisherman is in the spiky Swiss chalet style usually affected for this purpose by French architects.

M. PAGNERRE sends a design for a doctor's house with mullioned windows having Tudor labels, much resembling that produced here in the Early Victorian period.

M. BARROIS exhibits his design for a villa for a notary, with spiky roofs and total absence of repose. M. GUADET exhibits his drawings for a house in the Champs de Mars, a curious mixture of tiles and iron work, described by its author as "the application of hygiene to the dwelling-house." M. LEAUTEY sends his competition design for workmen's dwellings, completely worked out with heating and ventilation schemes.

Other designs are by M. POUTHER for a so-called villa at Paris-Plage, which suffers from the usual French fault of want of repose, and by M. BOUVY for a fussy street of houses in stone and brick.

If domestic architecture is bad, commercial architecture is worse. It is but poorly represented, it is true, by M. COURSIMAULT, who sends his "maison de rapport" erected at Paris, consisting of ground floor shops with flats above, the façade executed in a poor stone and brick design; and by M. BRANDON by his so-called "Palais Omar Effendi" at Cairo, a commercial five-storey building, in the "nouveau-art" treatment with central coloured dome carried up over the main staircase.

Public architecture—i.e. designs for public buildings—form as we should expect the best of the exhibits, mainly because the training at the Ecole des Beaux-Arts concerns itself principally with this aspect of design.

M. RENAULT is represented by his Hôtel de Ville for Chateaulin (Finistère) but, curiously enough, it is not in the traditional French manner, but in the far less appropriate Swiss chalet style, but arranged in the usual way with the "Halles-aux-blés" on ground and the "Salle des fêtes" on upper floor.

M. BECHMANN sends a practical set of seven large drawings of a large circular station of the Nord-Sud tube railway of Paris with central ticket office, which is mainly an engineering treatment.

Drawings are exhibited by M. CAPELLE for the Channel Tunnel, partly above and partly below the bed of the sea.

M. ADOUE has six drawings of his design for a museum at Bordeaux, with the traditional plain wall surface and central dome, and M. EUSTACHE sends his plaster model and photographs of the principal entrance, with coupled Doric pilasters and richly treated attic, to the Pavillon des Beaux-Arts at Rome.

M. RAYMOND HOOD is represented by his design for the City Hall for Pautucket, a twenty-storey American tower building, with lower part planned in the form of a cross and the upper part with diminishing stages.

The design for an abattoir for the town of Vichy, by M. MAIGROT, is represented by complete drawings and a bird's-eye perspective, and indicates that this class of work is retained by architects in France, and is not commandeered by the engineers.

One of the most interesting and the only English exhibit is by Mr. J. J. BURNET, described as a pupil of M. PASCAL, who sends his model and plans for the British Museum Extension. The simple reserved treatment of his fine northern façade compares favourably with any of the French designs.

The solitary town improvement exhibit is M. FLUGEL's design for the reconstruction of the "Pont des Arts," opposite the Louvre, by means of widening the approaches, which cannot be considered satisfactory as it leaves the width of the bridge itself untouched.

The most interesting and instructive of all the drawings are the "projets," as they are called, or imaginative designs, of all kinds, which form so important a part of a French architect's training, and which are sometimes of enormous size.

M. MIGEON sends three large strainers, one measuring twenty-five feet long, showing his design for a Yacht Club in the Mediterranean, placed on a tongue of land and consisting of three parts, a seaside palace, a club

house, and workshops, &c., for the building of yachts, a most unpractical idea, but one capable of exercising the imagination.

M. DURAND shows an ambitious design for the architectural treatment of a large public square, interesting at this period of Coronation, and showing true French delight in this class of work.

M. ARNAL's eight large strainers show his ingenious design for the transformation of the Archbishop's palace at Mans into a public museum and library, by encasing the central part with additional surrounding rooms.

The "Panthéon de l'art," a domical building with long apsed hall, situated in a public park and surrounded with statues and architectural settings is a "projet" by M. LEVY to contain six fine fresco decorations symbolising six great periods of art—Egypt, Rome, Athens, the Gothic period, the Renaissance, and the modern period. This is an example of a special design for decorative compositions very much favoured in France.

M. BRANDON has one of the most important exhibits in his sixteen large strainers—interiors, exteriors, and perspectives of the existing building, and projected alterations of the church of S. André at Chartres.

This is one of the most attractive sets of drawings, and indicates much labour. It shows the present church with its plain exterior and the proposed transformation by the addition of a spire and a new eastern portion which it is proposed to carry across the river Eure on arches, and to terminate with apsidal chapels. As altered it would form a magnificent group, but in many respects it is most fanciful and not likely to be carried out.

Another "projet" by M. DANIS consists of ten large strainers of "La Maison Royale de Trianon" (otherwise "Le Trianon de Porcelaine"), which was partly demolished in 1670, and is here restored according to the quaint descriptions of it by FELIBIEN DES AVAUX, with blue porcelain figures and vases.

M. GUERITTE sends a fine archæological study of twelve large strainers in his restoration of the "Pavillon, Jardin de la Bossière, à Paris," made up mostly from old prints and drawings, for the site is now occupied by the "Place Vintimille" and other streets.

The "Décoration d'une place publique," by M. CASTEL, is a fine imaginative composition with numerous statues and fountains, but far too elaborate for execution; as also is the fine late Renaissance design with a court of honour and formal garden for a Prince by M. CAMUZAT, and the "Colonial palace," shown on strainers 20 feet long, by M. VILAIN.

The drawings of old buildings are very interesting, and although they vary in execution very much from the English method, being shaded and projected with shadows, they are in many cases strictly practical.

The southern porch of the Cathedral of Chartres is rendered by M. PHILLIPE by a fine elevational shaded drawing.

M. GAUTIER sends some fine measured drawings of the interesting Church of Rocamadour-Camarel (Finistère), showing its big roof, covering nave and aisles, before the fire.

The Ministry of Fine Arts show some important drawings of old buildings in Poitou and Vendée, made by M. DEVERIN. Other drawings are those by M. BRUNET of S. Pierre at Chartres, by M. TITCOMB of the Town Hall at Brescia by BRAMANTE, by M. LEGUEN of the Renaissance house at Chartres, by M. GAGEY of the Church of S. Jacques, and by M. DANIS of the Great Hall of the Abbey of Pontigny.

M. PROST, however, sends by far the finest exhibit in this class. His twenty large strainers of S. Sophia, Constantinople, rival the fine set of measured drawings of DIOCLETIAN's palace at Spalato which appeared in last year's Salon. M. PROST's drawings consist of a general plan of Constantinople, and plans, sections, elevations in colour, and perspective sketches, forming a most magnificent set of drawings of this important building.

According to the section of the dome, its curious pointed appearance, which must be noticeable to everybody, is due to the wooden rafters added at the top to support the crescent, which was added by the Turks in A.D. 1453. It would, however, be interesting to know how much of the building was actually seen by M. PROST, for he shows the dome with bricks having radiating joints, and not as described by Mr. LETHABY in his book on the subject. The vault system is shown in a dissected state, as in CHOISY's great work. The twenty-eight drawings with suitable letterpress would form a valuable monograph on this important building.

Other measured drawings of note are the eight strainers of the "Château de Pau" by M. APPECEIX, the ten large strainers of the excavations of the French at Delos by M. GABRIEL, showing many suggested restorations of the houses in this interesting and important centre of Hellenic activity; and the set of drawings by M. BREUVILLIER, showing a restoration of the palace of St. Germain-en-Laye in the year 1665 with its formal gardens and terraces.

A feature of the Exhibition is the large number of water-colour drawings and pencil sketches of old buildings which give special interest to the department of architecture. The French method of expression in water colour is essentially suitable to buildings, and there are many delightful colour drawings of the picturesque edifices of France. We think it would be an excellent idea for this division to be accepted at the Royal Academy, as old and new buildings ought all to be classed as architecture. We would suggest that the present water-colour room and print room at the Academy should be given over to architecture, old and new, and that the present architectural room should be devoted to etchings and miniatures.

ROYAL INSTITUTE OF ARCHITECTS OF IRELAND.

A COUNCIL meeting of the above body was held last week at No. 31 South Frederick Street, Dublin. The President, Mr. A. E. Murray, R.H.A., F.R.I.B.A., was in the chair. There were also present:—Messrs. W. Kaye-Parry, C. H. Ashworth, Lucius O'Callaghan, F. G. Hicks, H. Allberry, F. Hayes, G. P. Sheridan, R. Caulfeild Orpen, J. H. Webb, A. G. C. Millar, and C. A. Owen, Hon. Secretary. A further report from the Examination Committee was received and adopted. The members of the Examining Board were approved, the date for the first examination was fixed for November 20 and 21, and the Hon. Secretary was instructed to advertise particulars of the examination at once.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE annual general meeting of the Royal Institute was held on Monday, May 1, when the report of the Council for the year 1910-11 was submitted and adopted.

Since the publication of the last annual report the Council have held 25 meetings, of which the Council elected in June last have held 22. The following committees appointed by the Council have met and reported on the matters referred to them:—Architectural Copyright Bill, Board of Architectural Education, Board of Examiners, Board of Professional Defence, Burlington-Devonshire Drawings, By-Laws Revision, Competitions, Dinner Committee, Fellowship Drawings, Finance, Hébrard Drawings, Licentiate's Drawings, Licentiate'ship, Parliamentary Bill, Premises, Professional Questions, Prizes and Studentships, Royal Gold Medal, St. Paul's Bridge Petition, Sessional Papers, Town Planning.

In the course of the past year the Royal Institute has had to mourn the death of its Royal Patron, who in the course of the nine years of his reign had annually granted his gold medal for the promotion of architecture.

His present Majesty has graciously consented to continue the grant, and has conferred the honour of his patronage upon the Royal Institute.

The losses by death have been as follows:—*Fellows*: George Aitchison, T. J. Bailey, E. J. A. Balfour, O. Caldwell, Sir Caspar Purdon Clarke, A. Cullen, Campbell Douglas, H. L. Fedden, A. C. Forrester, C. Hodgson Fowler, W. B. Gwyther, A. Murray, F. W. Peel, G. Ransome, E.

Skinner, H. Spalding, A. H. Tiltman, E. F. Titley, R. Selden Wornum; *Retired Fellows*: E. Boardman, J. G. Smither; *Associates*: C. A. Callon, A. B. Cottam, M. H. Holding, W. S. R. Payne, F. W. Roper, E. H. Smales, A. E. Tiller; *Licentiates*: J. Shepherdson, A. E. Pearson.

The Royal Gold Medal was awarded last year to Mr. T. G. Jackson, R.A., for his executed works as an architect and for his valuable contributions to the literature of architecture. Mr. Jackson received the medal in person at the general meeting on June 20, 1910, when he delivered a short address on the Art of Architecture. It has been decided to award the medal this year to Dr. William Dörpfeld, in recognition of his eminent services to architecture through his archaeological researches. His Majesty the King has graciously signified his approval of the award, and the medal will be presented to Dr. Dörpfeld on June 26.

The following tabular statement shows the present subscribing membership of the Institute compared with that at the corresponding periods of 1908, 1909, and 1910:—

Year.	Fellows.	Associates.	Hon. Associates.	Total.
1908	906	1,288	45	2,239
1909	888	1,344	46	2,278
1910	874	1,431	48	2,353
1911	862	1,509	55	2,426

The number of Associates shows a considerable increase, and the Council desire again to suggest to those Associates who are qualified for the Fellowship that they should take the necessary steps to enter the senior class. During the official year since the last annual general meeting 18 Fellows have been elected, 115 Associates, and 9 Honorary Associates.

On March 23, 1910, it became the duty of the Council to invite applications from architects qualified for the new class of Licentiates. A widely circulated appeal was made to the profession in the United Kingdom and the Dominions, and the Allied Societies were invited to co-operate in the work of enrolling the practising architects of the empire. In connection with the movement the Council organised a series of meetings in the provinces, with the assistance of the Councils of the Allied Societies, for the purpose of laying before provincial architects the important principles of the Royal Institute's policy, and of giving them an opportunity of applying for admission to the Licentiate class. These meetings were well attended, and aroused great interest, and did invaluable service in bringing the members of the profession in the provinces into closer sympathy with the work of the Royal Institute. Mr. Edwin T. Hall addressed a meeting at Manchester; Messrs. George Hubbard and A. W. S. Cross addressed meetings at Cardiff, Birmingham, Leicester, Sheffield, Liverpool, Rhyl, Nottingham, and Swansea (by deputy); and Mr. James S. Gibson addressed meetings at Newcastle, Edinburgh, Glasgow, Dundee, and Aberdeen. Before the expiry of the 12 months fixed by the supplemental charter some 1,200 Licentiates were elected after careful and exhaustive inquiry into their qualifications, both by the Council of the Royal Institute and by the Councils of the Allied Societies. At the close of the 12 months the applications were still coming in so rapidly that it became obviously desirable to extend the period of admission. Accordingly, by a resolution of a special general meeting, so as to enrol if possible all eligible members of the profession, the date was extended to the end of June 1912, and at the present moment the applications for admission are still coming in freely.

Under the terms of the policy agreed upon by the Royal Institute on March 4, 1907, it became necessary during the present session for the Council to draft a Registration Bill to secure the statutory recognition of the profession. This work was first entrusted to a strong committee, which drafted the principles of a Bill on broad lines to provide for the objects aimed at—the enrolment of all qualified architects within the Institute, the compulsory architectural education and examination of those entering the profession in future, and the legal recognition of qualified as opposed to unqualified architects. At this stage it became necessary to consider the position of the Society of Architects. On the initiative of the President a friendly conference was held between representatives of the two bodies, and it soon became apparent that there was a broad ground of agreement in their respective policies. Serious negotiations were then entered upon, and a scheme was prepared by the Councils of the two bodies which provided for the winding up of the Society of Architects and for the election of its members into the various classes of membership and Licentiatehip of the Royal Institute. The details of this scheme and the principles of the Registration Bill were laid before a special

general meeting on April 10, and after a long discussion were approved. If the scheme is approved by the general body of the Society of Architects and the resolution to effect the necessary changes in the by-laws is confirmed by the Royal Institute it will at once be proceeded with, and will remove the last obstacle which hinders the architectural profession from approaching Parliament as a united body in favour of the principle of registration.

The past year will be distinguished in the history of the Royal Institute by the striking success of the Town Planning Conference. Owing to the death of King Edward it was necessarily postponed from the date originally selected in July to the middle of October. It was favoured by the patronage of the King, and had the inestimable advantage of the enthusiastic and energetic honorary presidency of Mr. John Burns, M.P., President of the Local Government Board. It is not too much to say that during the week occupied by the conference it was the most important public function of the time in the eyes of the general public, and that it did incalculable service to the cause of town planning in this country. It aroused and concentrated public interest and attention upon the great possibilities presented by the Town Planning Act.

During the course of the past session a Standing Committee under the chairmanship of Mr. John W. Simpson has been actively engaged in considering the terms of the Government's Copyright Bill, in so far as they affect architecture. The views of the Council have been laid before the President of the Board of Trade, and there is good reason to hope that they will be favourably considered when the Bill receives its final shape, and that the claims of architecture will, for the first time, be treated with the respect that has hitherto been reserved exclusively for the kindred arts.

In the last report the Council referred to the efforts they had made to induce the Corporation of the City of London to see the advisability of bringing architectural advice to bear upon their proposals for the new St. Paul's Bridge and for the new streets in connection with it. These efforts unfortunately failed, and the Corporation have laid before Parliament a Bill in which they seek powers to carry out their scheme on the lines that have been so widely condemned. The Council have felt it their duty to petition Parliament against the Bill, and to appeal to the public to prevent this proposal from going further until it has been properly considered from other standpoints besides the purely utilitarian.

The question of the responsibilities that have been thrown upon architects as the result of recent legal decisions in cases of dry rot has been seriously occupying the Council during the past year, and the Board of Professional Defence are now considering what steps can be taken to safeguard architects against hitherto unsuspected responsibilities.

The progressive examinations were held in June and November 1910. The results are shown in the following tabulated form:—

	Admitted.	Exempted.	Examined.	Passed.	Relegated.
Preliminary examination ...	299	76	223	146	77
Intermediate examination ...	250	10	240	94	146
Final and special examinations ...	245	—	245	108	137

The Ashpitel Prize was awarded to James Bertie Francis Cowper, who passed the final examination in June 1910.

The deed of award of the various prizes and studentships was presented to the Institute at a general meeting on January 16, 1911. At the presentation of prizes on January 30, 1911, an address to students was delivered by the President, and a criticism of the work submitted was read by Professor C. H. Reilly. An exhibition of the drawings was held from January 17 to 30 in the Institute galleries, and was visited by nearly 2,000 persons. A selection of the prize drawings is now being sent the round of the Allied Societies.

On June 24 the Royal Institute took possession of the new premises at 9 and 11 Conduit Street with entrance from Maddox Street, the leases of which had been purchased from Messrs. Knight, Frank & Rutley. A scheme of alteration and decoration, prepared by Mr. Henry T. Hare, the hon. secretary, was at once undertaken, and the work was rapidly carried out during the vacation, so as to render the galleries available for the Town Planning Conference. While this work was going on it became apparent that the old premises also were urgently in need of repair in various directions, and before the end of the recess the drainage system and the electric light installation were completely renewed, and a re-

arrangement and extension of the library was carried out which have added greatly to its convenient and efficient working.

During the course of the year the Council have been compelled to take action in several cases of professional advertisement and breach of professional etiquette.

Many architects have applied for and received advice on questions of principle and practice.

The new draft regulations for architectural competitions, as revised by the special committee appointed by the Council to consider the suggestions made during the discussions at the meetings of January 3 and February 28 last year, were submitted to the general body at the meeting of November 21 and agreed to after slight modification. The document as revised has now been issued as an Institute paper and the old regulations have been withdrawn. The Competitions Committee have had under their consideration the conditions issued by various promoters, and in cases where the conditions have been unsatisfactory letters urging modifications have been sent to the promoters. In the case of the competitions for the New Cumnock United Free Church, the Rochdale Nurses' Home, and the Wallsend New School Buildings, the Committee's efforts to obtain satisfactory amendment of the conditions having been unavailing, the Council by publication in the Journal and in the professional Press have advised members of the Institute not to take part in them. The following have been the President's appointments to assessorships during the official year:—

Bangor	Baths	Mr. F. Batchelor.
Bradford	Infirmery	Mr. Keith D. Young.
Brighton	Grammar School	Mr. John Bilson.
Chedderton (Oldham)	New Town Hall	Mr. H. W. Wills.
Denbigh	Public Buildings	MM. Leeming & Leeming.
Douglas (I. of Man)	Villa Marina	Professor S. D. Adshead.
East Anglia	Institute for Blind and Deaf Children	Mr. H. P. Burke Downing.
Henley-on-Thames	School	Mr. T. Edwin Cooper.
Manchester	Library and Art Gallery	Mr. Reginald Blomfield A.R.A.
Marylebone	Town Hall	Mr. Henry T. Hare.
Salford	Secondary School	Mr. A. W. S. Cross.
Stockport	Proposed New School	Mr. J. W. Simpson.
Stockport	Police Buildings	Professor C. H. Reilly.
Southampton	Univ. College	Mr. Henry T. Hare.
Swansea	Corporation Bldgs.	Mr. S. S. Reay.
Taunton	Council School	Mr. H. W. Wills.
Weston Mill	Church	Mr. Walter J. Tapper.
Whitley (Newcastle-on-Tyne)	Cemetery Chapel	Mr. A. W. S. Cross.
Woldsea	Garden City	Mr. Raymond Unwin.

The balance sheet and other financial statements appended to this report indicate the manner in which the Council have utilised the accumulated funds of the Institute for the purpose of obtaining greatly enlarged and improved premises on a practically permanent tenure. By the purchase of Messrs. Knight, Frank & Rutley's leases, followed by the purchase of the shares of the Architectural Union Company, the Royal Institute now finds itself practically in the position of a freeholder of the whole premises extending from Conduit Street to Maddox Street. The expenditure necessarily entailed amounted to a larger sum than was immediately available, and an overdraft not to exceed 7,000l. has been negotiated with the bankers to supply the funds temporarily needed. It is expected that the balance of income over expenditure will be sufficient to liquidate the debt. Under the will of the late Henry Jarvis, Fellow, who died on March 4, 1910, the Royal Institute received the most important bequest that has ever fallen to it. When certain legal procedure has been concluded it is anticipated that the Council will have to dispose of the sum of at least 20,000l. The Council have appointed a committee to consider and advise them as to the best method of employing the bequest.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.

THE opening general meeting of the Society's year was held at the Leeds Institute on the 4th inst., Mr. H. S. Chorley, F.R.I.B.A., occupying the chair in the absence of the President, Mr. Sydney D. Kitson, F.S.A.

Both the Council report, read by the Secretary, and the balance-sheet, presented by the Treasurer, showed the Society's affairs to be in an eminently satisfactory condition, the total membership standing at 183, against 167 last year.

The following gentlemen were elected to the Council for the ensuing session:—President, Mr. Sydney D. Kitson, F.S.A.; Vice-Presidents, Mr. A. E. Kirk, A.R.I.B.A., Mr. Frederick Musto, A.R.I.B.A.; Hon. Treasurer, Mr. R. Fielding Farrar, A.R.I.B.A.; Hon. Secretary, Mr. R. W. Thorp, A.R.I.B.A.; Hon. Librarian, Mr. W. Whitehead, A.R.I.B.A.; Council: Messrs. G. F. Bowman, J. F. Walsh, H. A. Chapman, F.R.I.B.A., C. B. Howdill, A.R.I.B.A., J. C. Procter, A.R.I.B.A., and as Associate member, Mr. J. H. Farrar.

AN ARCHITECT'S DUTY.

IN the House of Lords on Tuesday, May 9, the Lord Chancellor and Lords Ashbourne, Alverstone, Atkinson, and Shaw heard an appeal by Messrs. Hickman & Co., building owners of a warehouse at 16 Christopher Street, Shoreditch, against a decision of the Court of Appeal, which held that there had been collusion between Messrs. Hickman and their architects. The Court of Appeal, therefore, had upset a judgment of Mr. Justice Hamilton in favour of Messrs. Hickman in an action brought against them by the executors under the will of the late Mr. Chas. Philip Roberts, who traded as a builder under the name of C. P. Roberts & Co. In 1906 C. P. Roberts & Co. agreed to erect the building at Christopher Street, and the dispute between the parties was as to a balance alleged to be due under that contract.

Mr. Hugo Young, K.C., for Messrs. Hickman, submitted that there had been no collusion between his clients and the architect. The architect, he said, might have been remiss in his duty with regard to the grant of a certificate, but Mr. Justice Hamilton, who heard the case without a jury, had found that though the architect had delayed giving a certificate at the instance of the building owner, he had not done so corruptly or in collusion with the owner, and that there had been no turpitude or anything that made him an unfit person to be allowed to settle further disputes between the parties. He pressed their Lordships to follow the decision of the judge of first instance, and enter judgment for Messrs. Hickman.

Without hearing counsel on the other side the Court dismissed the appeal.

The Lord Chancellor said he thought Messrs. Hickman could not in this case rely upon the architect's certificate either as a condition precedent to payment or as an adjudication binding on the other party. Mr. Robert Wm. Hobden, the architect, had, said his Lordship, placed himself in a position which deprived his certificate of the value which otherwise it would have had. In his opinion, however, this was not a case in which the terms "turpitude" or "fraud" were apt. The real error of Mr. Hobden's position was that he mistook his position, that he meant to act as mediator, that he had not the firmness to recognise that his true position was that of an arbitrator and to repel unworthy communications made to him by Messrs. Hickman. It was undoubted, however, that Messrs. Hickman tried to lead him astray in their own interests.

Lord Ashbourne concurred.

Lord Alverstone said it was very important that it should be clearly understood when an architect was appointed by both sides to act as arbitrator between a building owner and a contractor that he should maintain a strictly judicial position. Mr. Justice Hamilton fully recognised this principle of law, but decided against the contractor on the ground that he was aware of irregularities on the part of the architect and yet did not at once raise objection and stand upon his rights. He thought that in the circumstances Messrs. Hickman could not rely on the absence of a certificate for this part of the work. No certificate given under such circumstances would be binding, and therefore the giving or withholding of one was immaterial so far as the contractor's right to sue was concerned. He desired to adopt the language of the Lord Chancellor and to say that it seemed to be quite clear on the correspondence that the architect in this case had forgotten his duty to act strictly judicially.

Lord Atkinson also concurred, but remarked that in this case he thought that such words as "corrupt collusion" or "fraud" were too strong and rather extravagant words to use.

Lord Shaw expressed agreement with the other members of the House, and said that the position of an architect under a building contract was one of great delicacy. The Courts had held that he must act strictly in accordance with his judicial capacity and must maintain entire independence. His Lordship thought Mr. Hobden had not acted in accordance with that standard. In his opinion the action was properly raised and the subsequent grant of the certificate was too late to stay proceedings.

The appeal was therefore dismissed, with costs.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.

THE annual meeting of the Sheffield Society of Architects and Surveyors was held on the 4th inst. at Sheffield University. A satisfactory year's work was disclosed by the annual report, and the statement of accounts was also considered satisfactory. Officers were elected as follows:—President, Mr. J. B. Mitchell Withers; Vice-President, Mr. A. F. Watson; Treasurer, Mr. F. Fowler; Hon. Secretary, Mr. James R. Wigfull; Council, all the officers and Messrs. W. G. Buck, F. E. P. Edwards, R. W. Fowler, C. B. Flockton, J. R. Hall, H. L. Paterson, E. Winder, C. F. Innocent, H. I. Porter, and F. H. Wrench. In proposing a vote of thanks to the retiring President, Mr. Edwards warmly acknowledged the labours of Mr. W. J. Hale for the Society, which he said had gained increased prestige during his period of office. Mr. Wigfull seconded, and the vote was heartily accorded.

EDINBURGH ARCHITECTURAL ASSOCIATION.

THE annual general meeting of the Edinburgh Architectural Association was held at 117 George Street, Edinburgh, on the 3rd inst., Mr. James B. Dunn, F.R.I.B.A., President, in the chair. Reports were submitted by the Chairman of the Committee of Management, the Chairman of Council, the Librarian, and the Convener of the Publication Committee. Prizes were presented to the following members of the Associate section:—Competition "A" (for draughtsmen), design for a village inn—1, T. Aikman Swan; 2, James Macgregor. Competition "B" (for apprentices), design for treatment of terrace, stair, and wall to mansion-house garden—1, D. M. Gilchrist; 2, W. Patterson and J. S. Porter. Competition "C" (College of Art summer sketching class)—1, J. S. Bennet. The following office-bearers were elected for 1911-12:—President, Mr. James B. Dunn, F.R.I.B.A.; Vice-Presidents, Mr. Edward C. H. Maidman and Mr. William Davidson; Hon. Secretary, Mr. James Kerr, 122 George Street; Hon. Treasurer, Mr. W. G. Walker, C.A., 39 George Street; Hon. Librarian, James A. Arnot.

ILLUSTRATIONS.

THE ROYAL SHRINE AT WESTMINSTER AS IT MAY HAVE BEEN IN THE FOURTEENTH CENTURY.

"The shrine of the most illustrious King Edward the Confessor was placed on high like a candle upon a candlestick, so that all who enter into the House of the Lord may behold its light."

THIS quotation in Mr. Lethaby's book on the Abbey suggests the arrangement of the High Altar before the fifteenth century screen was erected. In the drawing, the chantry of Henry V., which was erected in the same century, is also omitted, and the thirteenth century Lady chapel is indicated beyond.

The coffin of St. Edward was of gold and precious stones, and rested upon the existing high basement, which is inlaid with coloured marbles and gold mosaic. This is encircled by the tombs of kings and queens, while around and above is the wonderful building of King Henry III., which may have been equalled, but has never been excelled.

The design of the cover suspended over the shrine is based on that over the shrine of St. Cuthbert, given in the "Rites of Durham."

The size of the High Altar is fixed by the thirteenth century retable, now preserved in the Jerusalem Chamber, which is here shown in what was, no doubt, its original position.

The design of the frontal is conjectural, being the arms of the Confessor, divided by four figures under gold canopies.

The well known drawing of the sanctuary on the Islip Roll, 1532, shows a rood beam with figures, the tester and the hanging pyx over the altar; but mention is made in the Records of Henry III.'s moving the rood, so there was possibly an earlier one than this, of rather different design.

The same King "arranged for two candles to be lighted on feast-days, together with the three other candles hanging before the high altar; of these the centre one had always burned perpetually; and he gave four silver basons to set them in (the centre one presumably being already provided for)." (*Customary*, p. 45.)

All the tombs are shown with testers, decorated in colour and gold, which they originally had.

The windows are shown with grisaille glass and

medallions of bright colour. The clerestory windows no doubt had one or more tiers of figures all round.

The wonderful mosaic pavement in front of the High Altar exists now, almost as laid down by Abbot Ware in 1268.

The lettering (the collect and part of the epistle for All Saints' Day) is based on the illuminated Missal of Abbot Litlington. The figure in the capital at the top represents St. Faith, from the early painting in the chapel. In the capital O at the bottom is a rough outline sketch from the fifteenth century picture in the National Gallery—the Exhumation of St. Hubert—which shows an altar with low retable, ridel posts, &c., similar to the High Altar suggested above.

BATTERSEA POLYTECHNIC.—NEW LIBRARY.

THIS addition to the Polytechnic has been erected at the south-west corner of the site facing the Battersea Park Road, and adjoining the present Reading Room. The whole cost of this building and its equipment has been defrayed by Mr. Edwin Tate, the first chairman of the Governing Body.

Externally the building is faced with Lawrence's hand-made red bricks, with Bath stone dressings, and the roof is covered with tiles. Internally the whole of the panelling and finishings are in Austrian wainscot oak, and the floor is laid with teak blocks, and coved ceiling is in fibrous plaster with a heavy wreath moulded enrichment.

At the west end of the room is a stained glass window, containing a seated female figure, representing Literature—this was executed by Messrs. Shrigley & Hunt, of Lancaster. A gallery runs round three sides of the room, and over the vestibule is a small book store. Provision has been made in the building to accommodate 15,000 volumes. The whole of the external and internal carving has been executed by Mr. Gilbert Seale, London. The ornamental glazing to the internal windows was executed by Messrs. Wainwright & Waring, Chiswick. The centre electroliers and the table fittings were by Mr. Omar Albrow, and the ornamental metal grilles were by Messrs. Spital & Clark. The general contractors were Messrs. Holloway Bros. (London), Ltd. The architect was Mr. F. Dare Clapham, F.R.I.B.A.

This drawing, which shows the centre bay of the south elevation, was shown at the Royal Academy last year.

WILD'S HOTEL, EUSTON SQUARE, N.W.

THIS was a sketch design for the proposed rebuilding with additions of the present building in Euston Square.

It was proposed to use Portland stone for the lower portion of the main fronts and elsewhere, to face the building with Crowborough bricks with red quoins, the roofs to be covered with green Westmoreland slates.

The scheme provided for a hundred bedrooms, and a large restaurant was arranged for in the basement, for the accommodation of excursion parties.

The architect was Mr. F. Dare Clapham, F.R.I.B.A.

STUDY FOR REARRANGEMENT OF THE SANCTUARY OF A CHURCH BUILT IN 1736.

THIS is a study for dealing with the somewhat common arrangement of the churches of this date, viz., that of a railed-in sanctuary of very small dimensions, such an arrangement being unsuited to the requirements of the present day.

This drawing shows an attempt to provide a sanctuary with just sufficient depth for the necessary steps to form a dignified approach to the altar, and to lessen the effect of the excessive width (it being necessary to extend the sanctuary throughout the whole width of the church) by means of an open screen on either side.

The authors of the drawings are Messrs. Rogers, Bone & Coles, architects.

MISERICORDS, NEW COLLEGE, OXFORD.

WE reproduce a sheet of drawings of some excellent examples of carving on the Misericords of New College Chapel, Oxford.

CHIMNEY-PIECE IN BRADFORD TOWN HALL.

THIS is part of the recent additions to Bradford Town Hall, carried out under the direction of Mr. F. E. P. Edwards in consultation with Mr. R. Norman Shaw, R.A.

THE ARCHITECTURAL ASSOCIATION.

THE annual dinner of the Architectural Association was held on Thursday, May 4, at the Empire Rooms, Trocadero Restaurant, W. The chair was occupied by Mr. Arthur Keen, President. Amongst those present were Sir Alex. R. Stenning, Mr. Leslie Vigers (President Surveyors' Institution), Mr. Robert Cobay (Master of the Carpenters' Company), Mr. G. E. Bond, J.P. (President Society of Architects), Mr. Henry T. Hare, Mr. A. W. S. Cross, Mr. Henry Tanner, Mr. S. Chatfield Clarke, Mr. John Murray, Mr. W. J. Hardcastle (President Quantity Surveyors' Association), Professor R. Elsey Smith, Mr. G. Bird Godson (President Master Builders' Association), Mr. Laurence A. Turner, Mr. W. Flockhart, Mr. Ian Macalister, Mr. J. S. Holliday (President Institute of Builders), Mr. A. M. Brice, Professor E. C. Alston, Mr. C. McArthur Butler, Mr. W. J. Tapper (Vice-President elect), Mr. F. Dare Clapham, Mr. Gerald C. Horsley, Mr. H. P. G. Maule, Mr. C. Wontner Smith, Mr. R. Frank Atkinson, Mr. P. W. Lovell, Mr. Ellis Marsland, Mr. Louis Ambler, Mr. D. G. Driver (Secretary A.A.), Mr. W. Curtis Green, Mr. Alan Snow, Mr. Rudolf Dircks, Mr. Stanley Hamp, Mr. Edwin Gunn (Hon. Secretary), Mr. Herbert Batsford, Mr. Percy May, Mr. G. Northover, and Mr. Geoffrey Lucas.

After the loyal toasts had been honoured Mr. HENRY T. HARE proposed "The Architectural Association." It was, he said, the toast of the evening that had been entrusted to him, and he felt very keenly the honour. He had intended to begin by saying that the Association was becoming rather an ancient body, but during the course of that dinner he happened to mention to his neighbour when the A.A. was founded, and he was at once informed that they were only children in comparison with some of the institutions in the City. That was true, of course; but the Association had been in existence sixty years, and had become at all events an established institution. In early times when it was first established for the encouragement and mutual intercourse of the younger members of the profession it must have been promoted by a very large amount of enthusiasm, just in the same way as it is now carried on. Otherwise it could never have existed for so many years and prospered in the manner that it had done. His own earliest recollections were about the year 1881, and he could well remember at that time two or three very tiny rooms at the top of the back stairs in the Royal Institute. When one compared the housing of the Association in those days with its premises at the present day one could not help feeling a certain amount of gratification at the progress made. The first great step was when it acquired premises of its own—very considerable premises for that time—in Great Marlborough Street, and when it established its regular school. For some years this went on very successfully, and in due course it became advisable to establish a day school. With that movement he had had the honour of being associated, and he felt very proud of it. When they launched forth on this scheme they did it with a certain amount of trepidation, but it all turned out much more successfully than they ever anticipated. Now it had so increased that one might say it was the greatest school in the country. Although there was much cause for congratulation, they ought not to be too puffed up or self-satisfied about what they had done. He really believed that the Association was still in its infancy and that they merely stood on the threshold of further developments. The courses of study were established under the very able guidance of the first master, Mr. Bolton. To him they owed a deep debt of gratitude, for he had to initiate and invent a course of study without previous experience, and he did it in a most successful manner. And what Mr. Bolton did has been carried on by Mr. Maule and his assistants. A more enthusiastic head for a school than Mr. H. P. G. Maule it would be impossible to imagine, and he possessed the rare and valuable quality of imparting his enthusiasm to his students. Although these courses have been established, they had only up to now been feeling their way, and he did not himself think that the course of architectural education was all that it should be. It was a great question whether in the space of two years they did not attempt too much and whether they ought not to confine their energies and re-arrange the course so as to make it more thorough. But he felt sure they were going on the right lines, and that the ultimate result would prove of the greatest benefit to the profession generally. One of the influences of a school of such a kind was in the direction of helping, more or less, to educate the public. That was one of their aims, for unless they had public appreciation and encouragement it tended to damp architectural enthusiasm. Another

reason for some possible self-doubt was whether a tendency did not exist to make it too easy for students to enter the profession. It would be a great pity if such were the case, for it increased the number of those who were entering the profession without reasonable prospect of their succeeding. There seemed to be an idea abroad that architecture was one of the easiest and cheapest of the professions. It should not, therefore, be made so easy as to encourage people to become members of it without proper natural qualifications. The Royal Institute of British Architects were contemplating the promotion of a Bill which will make education for architects a compulsory thing, and that no man shall be an architect unless he has gone through a definite course of study and has a certain amount of qualification. Such a project had a very direct application to an institution like the Architectural Association. If such a Bill were to become law (as he trusted it would) it must give a great impetus to what was at the present time the most important school of architecture and which would, he hoped, become a national school. He would also like to see the Association more intimately associated with the head and directing body in the kingdom, i.e., the Royal Institute. He did not see why there should be any serious difficulty in bringing the Association more under the ægis of the Institute, and he trusted that that might be accomplished so that the Association might be assisted in its upward course and become a great national school of architecture. In conclusion, he would like to say one word about the management and staff of the A.A. He himself was brought into intimate contact with the Secretary, Mr. D. G. Driver, during his year as President; and so he, like every other man who passed the presidential chair, knew full well what a devoted, energetic, and single-minded servant the Association had in Mr. Driver. No one who had not passed the chair could realise what Mr. Driver did for the Institution, and whatever success it has attained in the past was very largely due to his energy and initiative. He could only express a hope that Mr. Driver would be spared for many years to hold the position he occupied at the present time. Mr. Hare then proposed "May the Architectural Association have long life and prosperity."

Mr. ARTHUR KEEN, the President, in replying to the toast, said the enthusiasm with which it had been received showed that it was in no way on the wane. Most of them would have heard of the toastmaster who asked the chairman, "Will you make your speech now, sir, or let them enjoy themselves a little while longer?" But as they had got to have a presidential speech, he would get it over. Biologists told them that the farther an organism developed the less likelihood there was of any important change taking place, and that seemed to be the case with all things. The Architectural Association had been in existence long enough to know its own mind, and it has settled down to steady and good work. A good many things that belonged to the past had had to go; some things which seemed at the time to be important. The day and evening schools now occupied the place of classes conducted by voluntary instructors and the evening studio. Although, however, a great many things of the past had passed away there were still a great many things which maintained their existence and remained as hearty and as useful as ever. These included the old Sketch Book, the monthly journal, and the ordinary general meetings; on the Saturday afternoons there were visits to buildings; and, finally, the annual excursions. All these were as lusty as ever and doing good work. The annual play was quite an old institution, and they hoped to have a performance at the end of the month in the gallery of the Institute. Among the young institutions was the Athletic Club. He had been told by Mr. Henry Tanner (the Chairman) that when one talked of the Athletic Club one talked of the Association. This year they had acquired a permanent ground of six acres at Elstree; it was, they hoped, to be opened by Lady Webb, supported by Sir Aston, at the end of the present month. He trusted that it would be the first of a long series of functions on the Athletic Club's ground. Of course the Architectural Association existed to a very large extent for its schools. As regards these they had their critics, many of whom were wise critics, and the authorities endeavoured to profit by what they said. They had been told it would be a good thing to show the students the interdependence of the other arts with architecture. Accordingly they called in the assistance of artists who gave a series of lectures on subjects like Italian Mural Painting, Stained Glass, and Town Planning, and he hoped that they would be able to carry on a similar course of lectures in the session before them. Another point was that they should make their students better draughtsmen. They all knew that very well. The difficulty was to find time for everything. The Association had also its unwise critics, who wanted them to run

before they could walk, without giving any indication of how they were to do it. Just as among the most important characteristics of good architecture was an obvious sense of the fitness and suitability of the building for the purpose for which it was designed, so it was with education. Unless they gave their students a thorough and solid basis they were not training them well and doing them good service. Such a basis they were trying to give their students instead of what some critics say about beginning at high flights and leaving the rest to afterwards. They might certainly carry their education a great deal higher, and it was desirable that they should do so at the earliest possible moment. The difficulty was one of time and money. It was exceedingly difficult to find room for any more in the two years of day schooling and the two years of evening schooling. They wanted more time, either another year or another two years. His own impression was that they ought to charge the students more than they did. Before undertaking this higher education they must see their way to more money. As regards actual work done in the schools, he could not find very much fault with it. It was certainly sound and worked up from the matter of building to the matter of architecture. It was thorough in every aspect. The students were taken to buildings to see how they were carried out, and they trained them as well as they could. Of course they must not lose sight of the fact that those responsible have the Board of Architectural Education constantly before their minds. They had been very loyal to the Board in the past, and he had not the slightest doubt they would be loyal to them in the future. The Board were reconsidering things, and were very carefully considering before they destroyed anything what it was they proposed to put in its place. He begged the Board to bear in mind the capacity of the average student, the time at his disposal, and the difference which exists in the conditions between this and other countries. The progress made in architectural art during the last sixty years was not a thing to be lightly thought of, and the methods which led to that progress were not to be lightly set aside. Everyone was, of course, entitled to their own views, but the views of some of their critics were a little difficult to understand. A man might have his own pet subject, as in the case of the gas engineer who always pointed out to his wife when approaching a town the precise position of the local gas-works. But when a man let this characteristic take the form of criticism it behoved him to be careful and to be assured that his charges rested on a solid foundation. The exhibition now being held at their premises of work done in the past term showed a most marked degree of ability and indicated that the method of training was a good and an uncommonly sound one. Many of the drawings there were specimens of draughtsmanship which would reflect the highest possible credit on anyone, and they also proved that the men were thoroughly well trained in construction. He earnestly hoped that the younger men would see the advantage of sticking to and supporting the Architectural Association. There were many who had belonged to it for forty years. It was a matter of personal regret to him that he had not belonged to the Association as a young fellow, for he was perfectly certain that he would have made a great deal better use of the world, and the world would have made a great deal better use of him, if he had done so. They would find that the A.A. possessed all sorts of advantages for them; it gave them friendships, it excited their enthusiasm, and so on. Finally, Mr. Keen said he would express his very cordial thanks to all who had been of service to the Association in the year during which he occupied the chair. Of these there were a very large number. Mr. Maule had already been referred to; he was a genius for organisation and for infusing his enthusiasm into the students, and he carried on the school with the greatest skill and ability. All who helped the Association were working for the best possible end if they taught the students the elements of their calling and helped them to design their buildings in beauty and to build them in truth.

Mr. GERALD HORSLEY proposed "The Royal Institute of British Architects," and spoke of the long time during which the Institute and the Association had been closely allied. That alliance was stronger to-day and more potent for the good of their art than ever it had been. To certain of the younger members it might be that the Royal Institute presented something of a sinister aspect, seeming to them an examining body and nothing else. But he ventured to say that its examining side was the least interesting of all the Institute's many functions. That was because the Institute recognised, in common with the majority of the most important educational authorities, that the need of the country was for education and not for examination. Hence the

Institute accepted the work done in the Association schools and exempted the scholars who passed the four years' course from all its examinations except the final. The drawings executed in the fourth year are up to the standard required at the final examination, and it might well be that a certificated student will in the future be exempted from all examinations. If that could be arranged it would be a great thing, because the misfortune of the examination system was the cramming it involved. They owed a great deal to the Institute for the recognition of their schools and the annual grant towards expenses and towards the Sketch Book. They were also very grateful to those who visited the school. The Association was essentially an educative body, and its life-blood was in the schools of architecture. These were progressing daily and becoming more and more proficient. It had been a great pleasure for them to hear, a few evenings ago, the high praise given to the work of the students by Mr. William Dunn. Anyone who saw the drawings at present on exhibition in Tuflet Street must realise the progress made. To maintain the excellence of students' work is the chief object of the A.A. In carrying on the important work which the Association were doing for the good of the profession, and at the wish of the profession, they hoped they might continue to have a large measure of that kindly help and valued encouragement such as they had enjoyed hitherto. They had, further, to thank the Royal Institute for the very sympathetic way in which they viewed all their varied activities, especially this year, for the loan of the Institute galleries for the A.A. play. That night they had to regret that so zealous had been Mr. Leonard Stokes in the discharge of his presidential duties that a brief holiday and rest was necessary for him. They would all wish Mr. Stokes a speedy recovery and a speedy return. But that night they had present one of Mr. Stokes' able coadjutors in Mr. A. W. S. Cross.

Mr. F. DARE CLAPHAM asked permission to introduce into the toast list a toast which, with characteristic modesty, had been omitted, viz., that of "Mr. Arthur Keen, their President." The company then sang "For he's a jolly good fellow."

Mr. ARTHUR KEEN, in a few words, returned thanks for the compliment.

Mr. A. W. S. CROSS, in replying to the toast of "The Royal Institute of British Architects," expressed regret at the unavoidable absence of Mr. Leonard Stokes. As a past President of the Association, for some twelve years ago Mr. Stokes had occupied the chair, Mr. Stokes would have won the esteem of many of the older members. His self-denying labours on behalf of the Institute were probably better known to those present than to the speaker because from the unflagging energy he then displayed as their President, they would expect the same from him as President of the Institute. During the past year the work carried on within the four walls of the Royal Institute had increased by leaps and bounds, and the personal work of the President had increased in like proportion. Indeed, he was afraid that this temporary breakdown of Mr. Stokes was in a large measure brought about by his unselfish devotion to official duties. The question of education seemed to loom as large in the minds of the Association as it did at Conduit Street where rarely was there a council meeting without some reference to this burning topic. But the advent of the educationist within the hallowed precincts of Conduit Street resulted in the almost total disappearance of another person who on his first arrival was anything but a *persona grata*, viz., the registrationist. That militant gentleman, the cause of much internal strife, is now lost to the Institute for ever, his very name being tabooed and his ephemeral existence forgotten. He has sunk into an obscure grave unwept and unmourned. And it was deservedly so, for he committed something infinitely greater than a crime on his first appearance; he made a blunder—he called himself a registrationist. Hence his hostile reception and subsequent death. "What's in a name?" A name has a very great value indeed. With the advent of the registration movement we find strife, controversies innumerable, discredit, and separation of life-long friends. It was not known who introduced the word educationist. Since the advent of that word all has been harmony. If a systematic course of training is ever brought about the Royal Institute will look to the Architectural Association for sympathy, aid, and co-operation; and they knew they would not look in vain.

Mr. ARTHUR KEEN proposed "The Guests," coupling with the toast the names of Mr. Leslie Vigers, Sir Alexander R. Stenning, and Mr. Robert Cobay.

Mr. LESLIE VIGERS (President of the Surveyors' Institution), in reply, said it must have been in the early 'seventies when he first had the advantage of attending some of the

meetings of the A.A. At that time Mr. Phenè Spiers was taking a very active part. He felt sure that the Association must be of the greatest possible use to architecture, and he could only wish there was some similar educational body attached or connected with the Surveyors' Institution, because he felt it was of the utmost importance that young men as they came up to join their profession should have other opportunities of learning it than merely passing examinations for which they were more or less crammed. It would be a great step in advance for surveyors if some organised school could be started where the young men would gain practical experience.

SIR ALEXANDER R. STENNING confessed that on looking back he remembered that he had been a member of the Architectural Association somewhere in the 'sixties, although not a very regular attendant. In those days the Association was not what it was to-day. On paying a visit to Tufston Street a few days previous he had been struck by the beautiful drawings and specimens of work done; these did great credit alike to the teachers and to those who learnt in the schools. He felt that if surveyors had some school where the pupils could be taught the foundations of their profession it would be a very excellent thing. He had been asked to rejoin the Architectural Association. His fear was that he might be expected to pass some examination, as the only one he had ever passed was for the district surveyors.

MR. ROBERT COBAY (Master of the Carpenters' Company) also responded.

A musical programme was given during the evening by Miss Ruby Helder, Miss Ruby Wilson, Mr. Lorne Wallet, and Mr. Bull (banjo).

ARBITRATIONS.

(Continued from last week.)

THE withholding of a certificate is a very powerful weapon in the hands of a valuer, and when a valuer acts fairly and justly between the parties, will greatly assist business being conducted in a reasonable and smooth manner; it will make the unreasonable owner reasonable and the jerry-builder scamp his work less, but whether it is to be a powerful weapon for good or ill depends so much upon the man who has the exercising of the power.

The responsibility is very great, and because it is great it is a responsibility which should be entrusted to the best men, and that is one reason why I personally consider your Institute and similar professional bodies so useful; because by their examinations they ensure that men are qualified, and by your opportunities for mutual intercourse and discussion you are enabled to bring before the members of your institutions the proper methods of conducting your professions. You ensure to some extent that your young men at any rate shall be well equipped with a knowledge of their business, for surely there is nothing less desirable than that any one should undertake a business which he does not understand.

Another distinction between a valuation and arbitration is that the authority of a valuer cannot be revoked when the parties have agreed that a third person, or third persons, shall by his or their skill and experience settle a question of value between two persons. That was decided in a case of the Northampton Gas Company *v.* Parnell; but a submission can be revoked, as we shall see later. Neither can such a valuation be set aside like the award of an arbitrator.

Arbitrations are judicial functions, and although arbitrators must decide upon the facts placed before them by the parties to the arbitration and are precluded from calling witnesses themselves without the consent of the parties, yet they may decide disputes and issue awards without hearing the parties or taking any evidence in certain cases such as:—

1. Where it is agreed that such shall be the method of procedure.
2. Where neither party asks for a hearing or to be allowed to give or tender evidence in support of his case.
3. Where the arbitrator is employed as an expert to settle some question in which he has some special knowledge or skill, and there is in the agreement to refer a clear intention that he should thus act.
4. Where the facts to be decided are confined to the knowledge of the arbitrator, and there is no outside information to be brought before him.

One very good test of whether a person is acting as arbitrator or valuer is to ask oneself the question what would happen if the person in question died or refused to act or became incapable of acting? If he was to act as an arbitrator

then the Arbitration Act of 1889 sections 5 and 6 would apply, and the Court would have power to appoint another in his place, but if the deceased was to have acted as a valuer and not as an arbitrator then the Court has no power to appoint anyone to act in the case of such a vacancy and someone else would have to be appointed by the parties themselves, and if the parties did not agree the contract could not be specifically enforced. Section 9 of the Sale of Goods Act 1883 provides "where there is an agreement to sell goods on the terms that the price is to be fixed by the valuation of a third party and such third party cannot or does not make such valuation, the agreement is avoided. Provided* that if the goods or any part thereof have been delivered to and appropriated by the buyer he must pay a reasonable price therefor. Where such person is prevented from making the valuation by the fault of the seller or buyer the party not in default may maintain an action for damages against the party in default."

Again an arbitration is usually intended to oust the jurisdiction of the Law Courts which in the usual way would be the method of settling disputes between litigants.

It is not possible to consider the history of arbitrations in the short time at my disposal and which is a section of the history of law, and would hardly be sufficiently interesting to you to-day. It would entail a careful consideration of legal procedure at the commencement of the nineteenth century, at which period it is quite conceivable that litigants preferred arbitration to the intricate procedure over an extended period which had to be gone through with uncertain results.

It must not, however, be supposed that the fact that a dispute has been referred to arbitration will make the question more easy of settlement. I am concerned myself with an arbitration which has extended over three years at this present time—the parties having been before the Arbitrator whose award was upset by the High Court, then before the Arbitrator again for a large number of days who published his award; this second award was remitted to a Judge of the High Court for argument; he decided that the Arbitrator was partly wrong and partly right; the parties then sought the assistance of the Court of Appeal, who decided that in the questions submitted to that Court the Arbitrator was totally wrong; the successful litigant before the Arbitrator who was partly successful before the High Court and unsuccessful before the Court of Appeal then went to the House of Lords, who decided that the Court of Appeal was right and the Arbitrator wrong. Well may the parties after three-and-a-half years of continuous legal proceedings, and enormous cost running into thousands of pounds, ask if *this* is what a simple arbitration is what is a real law action?

Sometimes, of course, a simple question can be submitted to an inexperienced arbitrator and settled. One of the earliest on record that I can think of for the moment was when King Solomon was asked to decide who was the mother of the child and displayed an amount of wisdom which made him renowned throughout the world as a wise judge. I wonder if his task would have been as easy if he had been called upon to decide who was the father? You can each make up your minds how you would conduct that inquiry.

And remember it is not always simple questions that are submitted; in fact, in complicated questions of account and such-like matters Courts of Law recognise that what is called a reference is the better plan. To-day, however, we are not dealing with references, but with arbitrations.

Let us, therefore, consider in what way the ordinary jurisdiction of Courts of Law is ousted and whether any ultimate appeal to the Law can be obtained, and, if so, under what circumstances.

By the agreement to arbitrate it will be provided either:—

1. That no action shall be brought and that all questions shall be referred to a domestic forum, or
2. That no action shall be brought until an award of an arbitrator has been given.

If an Act of Parliament provides for arbitration the jurisdiction of the ordinary Courts of Law is ousted altogether. But if not provided for in an Act of Parliament or in an agreement confirmed by statute, then the jurisdiction of the Courts of Law is not necessarily ousted by an agreement to arbitrate, as either party can commence an action against the other subject only to the other party applying to the Court under Section 4 of the Arbitration Act for an Order staying such action, which Order the Court has a discretion whether it will make or not, and such application for the stay must be made before any "step" is taken by the applicant in the action.

As to what is a "step" is a question of some legal technicality, and hardly of interest to-day; for if any such pro-

ceeding should be contemplated by any of you, I take it that as wise men a legal adviser would be called in; and, further, it is a question which many a legal adviser would have to look up before giving an opinion. Should, however, the occasion arise, these words of mine may be a signal that advice is necessary.

On the question of discretion the Court will as a rule enforce the agreement and stay the proceedings, considering that the parties having chosen their own tribunal, they are bound by their agreement and should stand by the bargain made; it may be, however, that one of the parties denies the validity of the contract containing the agreement to arbitrate; under such circumstances the Court would certainly not stay the action, but would decide first the validity of the agreement before allowing an arbitration to proceed. It matters not whether the questions to be decided are questions of fact or questions of law, although the authorities on this point are somewhat difficult to reconcile. However, it must always be remembered that the Court will not give assistance to a domestic forum, and that the arbitrator's jurisdiction is limited to the four corners of the submission, so that a pending action relating to matters not included in the agreement to arbitrate would not be stayed by the Court, neither if a substantial part of the claim did not fall within the agreement; but if the claims could be divided or separated, then the action would probably be allowed to proceed as to the portion not in the submission and stayed on to the other portion. The one case where the Court will as a rule refuse to stay is when questions are to be submitted to arbitration, and either party charges the other with fraud; if a *prima facie* case is made out, the Court will not stay the action unless the parties have previously explicitly agreed that questions of fraud shall be arbitrated.

Instead of endeavouring to oust the jurisdiction of the Courts altogether, the parties may have agreed to make the arbitration only a condition precedent to any right of action under the contract, so that no action can be brought upon the contract until an arbitration has been held on preliminary questions or disputes; the legal position was very concisely and clearly stated by one of the cleverest exponents of English Law in *Dawson v. Fitzgerald*, 1876, by Sir George Jessel, the then Master of the Rolls, who in the course of his judgment, said: "I take the law as settled by the highest authority, the House of Lords, to be this:—There are two cases. First, where the action can only be brought for a sum named by the arbitrator. Secondly, where it is agreed that no action shall be brought till there has been an arbitration, or that arbitration shall be a condition precedent to the right of action. In all other cases where there is first a covenant to pay, and, secondly, a covenant to refer, the covenants are distinct and collateral, and the appellant may sue on the first, leaving the defendant to pursue one of two courses, either to bring an action for not referring or to apply under Section 11 of the C.P.L. Act, 1854, to stay the action until there has been an arbitration." (At the present day, of course, the procedure would be to apply to have the action stayed under the Arbitration Act, as before explained.)

The agreement to refer having been entered upon the Arbitration Act provides that unless a contrary intention is expressed therein, the submission shall be irrevocable except by leave of the Court or a Judge, and shall have the same effect in all respects as if it has been made an Order of Court.

Before, however, the Court would revoke an agreement to refer a very strong case would have to be made out. It used to be considered a ground where it could be proved the arbitrator was wrong on a point of law, but that would hardly be the case now, as the party alleging he was going astray would have his remedy under Section 19 of the Arbitration Act and could apply for a case to be stated on the question of law raised, and the arbitrator could not well, unless the question was really frivolous, refuse to state such a case; if he did, an application to the Court would remedy the matter.

The Court will not restrain arbitration proceedings simply because they are being conducted irregularly. Nevertheless, at such a time it is important that the parties should know how to act, as by continuing to take part in the irregular proceedings, it may be held that they have waived any right to take advantage of the irregularity. The proper course to pursue under such circumstances is to take exception to the proceedings, and then having stated your objection, to continue to take part in the proceedings "under protest," thus preserving your right to apply to the Court

to set aside the award if irregular; but at the same time continuing to take part in the proceedings to see how matters proceed and how much further the arbitrator may be led astray or go astray, and also to bring your case before the arbitrator, that he may know the merits in case you subsequently lose on your technical ground.

An arbitrator is the person selected by the mutual consent of the parties to determine a dispute or disputes or controversies, whether they be matters of fact or law, and he should undoubtedly be actuated in coming to a decision by the same rules and principles which would actuate a Court of Law although in matters of procedure he is not so fettered. His jurisdiction is limited by the terms of the submission, and it is his duty to decide all and only such questions or disputes as may be submitted to him; he must be careful not to leave undone what he should do or not to meddle with such things that are not submitted to him. The parties to an arbitration do not in any way surrender any rights beyond those which by their agreement *legally* construed they have put within the arbitrator's power, and no mistake of the arbitrators as to the limits of the matters committed to their decision can bring anything within the scope of his jurisdiction which the parties did not by their contract when rightly interpreted place within it.

Although anyone can be an arbitrator the really important thing to bear in mind in arbitrations is to have an experienced arbitrator. Under the ancient system of pleading there was much technicality and considerable art, so much so in fact that in many instances a case was killed by its pleader, as, I am informed, babies are sometimes overlaid by their nurses. A case was frequently pleaded out of Court. It was a crowing match rather than a genuine fight. The present system is not so technical, there is not quite so much crowing. Now that legal procedure has been simplified so much it seems to my mind strange that so many people prefer to pay high fees to arbitrators to settle disputes for them instead of having such disputes decided by a Judge of the High Court. Arbitrations, however, appeal to people; it is provided for as common form in many classes of agreements and Acts of Parliament, and people may be brought into an arbitration before they realise what has happened and without their consent. Under such circumstances I would suggest to you that you should advise your clients to be careful as to who they appoint as arbitrator or umpire, and if you are acting as umpire or arbitrator perhaps I may suggest one or two things worthy of consideration. An arbitrator (and when I say arbitrator I include also of course umpire) should first of all be well versed in the law of evidence. This is all-important. As a rule, although there are always two sides to a question there is generally only one side to a case. No doubt a good deal of side is often put on by the learned advocate and made to look so like what ought, in his opinion, to be the other side that it really may be mistaken for it. In such circumstances you want as judge a man of experience not easily to be deceived, not one governed by prejudice or emotion, not a man who will be led away by his own peculiar views and crotchets, but who is capable of being able to judiciously consider all the surroundings, cute in perceiving fallacies and in estimating the character of witnesses. He must have a clear understanding of the nature of the evidence, as Lord Bacon writes: "In suits which a man does not well understand, it is good to refer them to some friend of trust and judgment that he may report whether he may deal in them with honour, but let him choose his referendaries for else he may be led by the nose." An arbitrator must conduct his inquiry in a judicial manner, he should be able to act as both Judge and jury, and to do this he must be able to decide what is evidence and what is not evidence. This can only be judged by one who has the question at his finger ends. It must be clearly understood that I do not mean to suggest that the arbitrator must therefore necessarily be a lawyer; many of the most efficient arbitrators have not been lawyers, and of course many of the persons administering law in this country to-day are not lawyers. Take the great number of men who devote a great deal of time to their public duties, the "Great Unpaid" or magistrates, but they have always the advantage of having a more or less competent clerk to advise them. To my mind an arbitrator with a judicial manner and knowledge of legal procedure is much more satisfactory as an arbitrator than one with a special expert knowledge but no legal training—and my advice would always be, get a man who thoroughly understands how to conduct a trial, otherwise the proceedings may become entirely abortive by reason of some irregularity in the conduct of the arbitration or the preparation of the award.

A study of the history of the law of evidence is extremely interesting and may account in some degree for arbi-

trations becoming popular. Less than a century ago in Law Courts the mouths of plaintiffs and defendants were closed, and so they could not give evidence; in fact, no one could give evidence who had the slightest interest in the result of the case, and consequently more often than not the mouths were closed of those who knew most about the dispute. It is quite unnecessary to quote from old law reports on this point, but I can refer you to the report of a law case which you will all be familiar with, viz.: *Bardwell v. Pickwick*.

Have you ever wondered why in the case of *Bardwell v. Pickwick*, Mrs. Bardwell never gave evidence to say that Pickwick did promise to marry her, and Mr. Pickwick never went into the witness box and denied that he ever promised to marry the plaintiff and explain away the circumstantial evidence which had been given against him? The reason was that when Dickens wrote "*Pickwick Papers*" neither plaintiff nor defendant was allowed to give evidence.

Arbitrators must make their award in writing within three months after entering on the reference or after having been called upon to act by notice in writing from any party to the submission, or on or before any later day to which the arbitrators by any writing signed by them may from time to time enlarge the time for making the award, and when an award is remitted by the Court or Judge the arbitrator or umpire shall, unless the order directs otherwise, make their award within three months after the date of the order.

(To be concluded.)

ARCHITECT'S CLAIM FOR FEES.

FOR professional fees in connection with a projected scheme for the building of a skating rink and assembly rooms at Newcastle, Mr. Clare Arnold Clayton Greene, a licentiate of the Royal Institute of British Architects, practising at Sunderland, brought an action before Mr. Justice Coleridge in the King's Bench Division, on Saturday, against Mr. James McEwan, a Newcastle builder. The defence was that plaintiff was only to receive five per cent. commission on the work actually carried out, and that the building had been abandoned.

Mr. Rayner Goddard, for the plaintiff, said that by the present action plaintiff was claiming two and a half per cent. on 13,000*l.*, which he estimated as the cost of the completed building.

When Mr. McEwan first discussed the scheme for the establishment of the rink, counsel said, he told Mr. Greene that as he had not yet acquired all the necessary land, anything that Mr. Greene did at that time must be gratuitous. Plaintiff got out sketch plans on these terms. Gradually the scheme evolved into something larger, and it was finally proposed to include in the plan one large assembly hall, a dancing hall, and a billiard room. Later the land was bought, and then Mr. Greene's services as architect began. He and his assistants were engaged altogether about fifty-three days on the work. He made several sets of plans, a complete set of contract drawings and the necessary tracings. All the alterations required by the local authority were carried out, there had been a survey of the land, twelve journeys to Newcastle, and the getting of estimates, which was no part of the duty he was bound to perform. The 13,000*l.* on which commission was claimed counsel suggested was a moderate figure, as cubed up at 6*d.* a foot the cost worked out at 17,000*l.*; but plaintiff had no desire to increase his claim.

Mr. Ralph Bankes, K.C. (for defendant): We made out the cost of the building at 18,000*l.*, and that was why it was not proceeded with. The cost was limited to 10,000*l.*

Mr. Rayner Goddard disagreed with the suggested limitation. Plaintiff, continued counsel, was entitled to two and a half per cent. commission on the total cost, as by a letter stating the terms on which Mr. Greene was willing to act as architect he stipulated for two and a half per cent. on the starting of the work. Mr. Greene did everything an architect ought to do down to the starting of the work. Therefore on that ground alone he was entitled to his two and a half per cent. But he was also a member of the Institute, and the regular scale of the Institute for abandoned work was two and a half per cent., as the defendant must have known.

Mr. Greene, in evidence, said that defendant never suggested that he should only receive commission on the amount of work actually carried out, and never complained to plaintiff that the plans were too elaborate.

Cross-examined by Mr. Ralph Bankes, witness said he was not told by Mr. McEwan to design a building to cost 17,000*l.* or 18,000*l.*, but he was not a free agent in the matter of the

extensions. Mr. McEwan controlled the scheme throughout. Witness denied that defendant limited him to a cost of 10,000*l.* or that a considerable portion of the excess was due to ornamentation. He agreed that Mr. McEwan might have said at first that he would like the scheme to work out at 10,000*l.* He denied the suggestion that "while the plans were very elaborate and expensive, on the other hand they were singularly lacking in detail, and there was no proper specification."

Re-examined, witness said that he had received a letter from defendant saying that no money was obtainable for skating rinks, and he had decided to drop that out of the scheme. Beyond this letter he had hitherto received no indication from defendant of the reason for the abandonment of the scheme.

Other evidence as to the sufficiency of plaintiff's plans and specifications was also given.

For the defence Mr. James Critchley, an architect and surveyor, practising at Newcastle, said he took out the quantities of plaintiff's scheme. Owing to discrepancies in the dimensions as shown on the sections and on the elevations, the work took him longer than it should have done, but eventually he worked out the cost of the scheme at 18,000*l.* Defendant told him to try and cut the expense down. He cut the decoration and elaboration out of the scheme, and this time the cost worked out at 13,500*l.*, which he told defendant was a minimum unless the stone work were deleted. The doorway as shown on plaintiff's scheme was not so very handsome, indeed there was such another doorway in Newcastle. It did credit to the design. Mr. Critchley said that a building was now being erected on this site at a cost of about 9,000*l.* He did not think plaintiff was entitled to two and a half per cent.

The defendant said in evidence that plaintiff's scheme had not been carried out because he had not been able to raise the 11,800*l.* It was not his fault that the scheme developed into one which would cost 18,000*l.* He paid plaintiff 100*l.* on account before he knew what the value of plaintiff's work was, but when he made up his mind not to go on with the scheme he decided not to pay him any more.

Cross-examined, defendant agreed that when the present building was finished there would be on this site a picture palace instead of a skating rink, but he would not agree that the carrying out of plaintiff's scheme fell through because no one would at that time finance a skating rink.

The Judge: Are you employing another architect on this building?—Yes.

The Judge: Is he working on the plans of Mr. Greene?—No.

Defendant said he always told Mr. Greene that his limit for the rink was 10,000*l.*

His Lordship, in giving judgment for the plaintiff, remarked that the parties in this case had entered into a special contract, and if the building had been erected and the work gone through, plaintiff would have been entitled to rely on the terms of the contract irrespective of whether the remuneration due to him was the usual architect's fee. But inasmuch as the scheme had been abandoned, the contract was never fulfilled on either side, and there was no stipulation in the letters which formed the contract to the effect that nothing should be paid if the work did not go through, then the claim became one for services rendered irrespective of the terms of the contract. The plans prepared by Mr. Greene were, continued his Lordship, detailed and, so far as he was a judge, highly artistic. He took no notice of small flaws. The plans were all that could be desired or deserved by defendant. Originally, no doubt, Mr. McEwan had spoken vaguely of 10,000*l.* as the amount he thought might be obtained for the purposes of the building; but that was at a time when the various items in the scheme were not in contemplation. The dancing hall and billiard saloon were suggestions made at a later date, and naturally increased the probable cost. Finally, the matter was rather vague, but still mention was made as to the estimated cost not exceeding 13,000*l.* and he dared say that at the time defendant rightly thought he might be likely to raise so much in view of the handsomeness of the proposed building.

When the plans came to be investigated, it was discovered that they contained a great deal of ornateness which might be scratched out without detriment to the structure. As they stood the building could not be erected for less than 17,000*l.* or 18,000*l.* Ultimately it was found that without ornament it could be put up for 11,800*l.*; and his Lordship said he had to take some figure between these two for the calculation of commission. He thought plaintiff's estimate of 13,000*l.* was not excessive; and adopting that, he took as a sort of rough guide percentage of two and a half usually charged

by architects. But it was said that the two and a half per cent. included a charge for getting out specifications sufficient for an outsider. In this case plaintiff had not to do that, and although the work done was in fact sufficient, there would be a deduction of 20% on that account.

A minor claim with regard to plans for a dwelling house was also made by the plaintiff, and his Lordship allowed the 18% claimed in that case.

Judgment was accordingly entered for the plaintiff for 223% and costs.

THE ILLUMINATING ENGINEERING SOCIETY.

A MEETING of the Illuminating Engineering Society was held in the rooms of the Royal Society of Arts on Tuesday, March 14, at 8 p.m.

Mr. Charles Hastings took the chair in the absence of the President, Professor Sylvanus Thompson, for whose inability to attend he expressed regret.

Before the discussion on school lighting was resumed, Dr. Harman gave a demonstration with an instrument which he has devised for testing eyesight. It consists of a long bar, having fixed upon it a screen with a hole. At the other end of the bar is a little rack for holding test cards containing characters of various sizes. The instrument can be adjusted for varying distances between the eyes of different persons, and the aperture in the screen can be reduced until the proper balance is arrived at. Dr. Harman proposes to use this upon children three times a day, and then strike an average.

Mr. T. E. RITCHIE exhibited a number of slides showing artificial lighting in educational institutions. The first was the chemical laboratory of the London Day Training College, which measures 48 feet by 30 feet; height to ceiling, 20 feet; illumination, average of 16 readings on benches and tables, 3.06 foot-candles; minimum, 2 foot-candles; maximum, 4.2 foot-candles; watts per square foot of floor surface, 1.38; and the diversity co-efficient, 2.1. The blackboard in this room has an average illumination of 2.07 foot-candles; minimum, 1.9; maximum, 2.3; diversity co-efficient, 1.2. Another narrow blackboard on the wall had an average of 1.68 foot-candles; minimum, 1.6; maximum, 1.8; diversity co-efficient, 1.12.

The museum in the same institution measures 40 feet by 19 feet; height, 12 feet; illumination on tables and cases 4 foot-candles; minimum, 3 foot-candles; maximum, 5.4 foot-candles; watts per square foot, 1.3; diversity co-efficient, 1.8. The average on the blackboard was 2.37 foot-candles; minimum, 2.2; maximum, 2.6; diversity co-efficient, 1.18 only.

The manual training room at the same college showed a very even illumination. The measurements of the room are 39 feet by 32 feet; height, 12 feet; average illumination on benches, 4.84 foot-candles; minimum, 3 foot-candles; maximum, 6.1; watts per square foot, 2.6; diversity co-efficient, 2.3. The blackboard illumination was 2.6; minimum, 2.5; maximum, 2.8; diversity co-efficient, 1.12.

The gymnasium was another excellent illustration of even lighting upon the floor. The measurements were 50 feet by 39 feet; height, 20 feet; average illumination on the floor, 2.64 foot-candles; minimum, 2.4; maximum, 3; watts per square foot, 1.02; diversity co-efficient, 1.25.

The lecture theatre is lighted by indirect means, the light being reflected from lamps high up and invisible to the eye. The measurements are 50 feet by 50 feet; height, 18 feet; average illumination on the centre benches, 4.12 foot-candles; minimum, 2.2; maximum, 4.8; watts per square foot, 1.32; diversity co-efficient, 2.18.

The next slide was a photograph of the exterior of the Westminster Technical Institute taken at night, which showed a very diffused light, and the absence of all glare. The interior of the testing laboratory at this institution has an average illumination on the desks and the benches of 5.25 foot-candles; minimum, 4.9; maximum, 5.8; watts per square foot, 2.2; diversity co-efficient, 1.2. Mr. Ritchie called attention to the fact that this latter figure is lower than any of those mentioned by Mr. Gaster or Mr. Dow, in either German or English schools, and was the lowest he had personally come across. The blackboard illumination in this room was an average of 2.58 foot-candles; minimum, 1.4; maximum, 3.1; diversity co-efficient, 6.3.

The wood-working department in the same institution was another illustration of the efficiency of indirect lighting, as it enabled very excellent photographs to be taken by its aid.

Other photographs were shown of the antique art room, the men's clay-modelling room, the elementary art room, in

which latter the blackboard illumination was particularly fine, the art class painting from models, and finally a room in which five-ampere arc lamps were burning three in series on a 220 volt circuit, with a total watts per square foot of only 0.81, which is extremely low for a light value of that kind. Mr. Ritchie expressed the opinion that this form of lighting might be found particularly suitable for small classrooms.

"Some Notes on the Illumination in Various London Schools and Colleges," by Leon Gaster and J. S. Dow, were then read as follows:—

It occurred to the writers that it would be interesting to supplement the valuable papers by Dr. James Kerr and Dr. Bishop Harman by a few tests showing the actual conditions of illumination prevailing in various London schools and colleges.

With this end in view, a few schools attended by children and infants, some of the large public schools for boys, and a series of colleges were visited. It was naturally impossible to do more on this occasion than select a few typical examples of each class, and the results of these casual visits made are not to be regarded in the light of a comprehensive examination or report. A truly searching investigation into the lighting conditions in any one college or school would alone furnish ample material for an evening's discussion. It is hoped, however, that the results will be of service in showing the usual arrangements for lighting at present employed, and the average existing order of illumination. They should also serve to show how comparatively simple measurements of illumination have now become.

We hope that others will be sufficiently interested to follow up the suggestions tentatively thrown out, to make measurements in the particular schools or colleges under their supervision, and to devise improved methods of lighting. It would be to the interest of school and college authorities to encourage investigations of this description, as it would doubtless often be possible, by comparatively small modifications, to secure substantial improvements. Work in this direction is certainly needed. The question as to what constitutes ideal illumination in educational institutions of different kinds still remains to be settled but there are already evident many directions in which improvements are possible and desirable.

The data collected refer mainly to artificial illumination; there are, however, also a few measurements of day light which may be of interest. The results as regards artificial light are summarised in Tables I., II., III., IV., and V.; daylight is treated in a special section.

In each case the chief object was to make measurements of the illumination on desks and blackboard. In addition an approximate estimate was made of the consumption of gas and electricity, as far as local conditions and information available allowed. All measurements of illumination were made with the Holophane Lumeter instrument.

In examining elementary and other London schools, schools at Haverstock Hill, Charing Cross Road, Richard Street, Islington, and Merton Road, Wandsworth, were visited. The two former are electrically lighted and the latter by gas. It appears that the conditions at Haverstock Hill are typical of the new electric installations. Here the artificial illumination on the desks is very uniformly distributed; in this respect it presents a marked contrast with the daylight illumination. The opal shades are specially designed for the size of the classroom. They cover the half-frosted tungsten lamps in such a way that one is not able to see the naked filament of the lamp even from the back desks; and the blackboard illumination, over 3 foot-candles, is also above the average.

A great simplicity is effected by the adoption of a standard size of classroom and the choice of the system of lighting best adapted to the conditions. The watts per square foot, about 0.5, would probably be considered satisfactory in view of the illumination secured, and the wiring arrangements have also been devised with a view to the greatest possible simplicity and economy in first cost.

The lighting of the schools in Charing Cross Road is of older date. Carbon filament lamps are still used, and it will be observed that the consumption per square foot is high. Nevertheless the distribution of illumination in the various rooms visited is less satisfactory than at Haverstock Hill. For example, in the cookery and laundry rooms several defects may be noted. In the former case the illumination of the demonstration table is too weak, and on the dresser even more so; in the latter the arrangement of the lamps tends to throw too much light on the gangways, while the illumination in the neighbourhood of the sink and mangle in the corner is only about half a foot-

MODERN EUROPEAN ARCHITECTURE.

GERMANY.



[From *Dekorative Kunst*.]

A COUNTRY HOUSE AT WITZENHAUSEN.—Herr RICHARD RIEMERSCHMID, Architect.

candle. In some cases the naked filaments of the lamps are only imperfectly concealed from the eye by the shades used. In a third room, devoted to ordinary classwork, this was particularly noticeable from the back row.

By the kindness of Mr. Chalmers, manager of the school at Richard Street, Islington (lighted by gas), one of the authors had an opportunity of visiting these schools. It is interesting to observe that the distribution of illumination in many of the classrooms resembles very closely that at Haverstock Hill. A large number of rooms were visited, and the value of the illumination on the desks repeated itself very consistently. One would be inclined to suggest that the shades used might be exchanged for some form (such as that described by Dr. Harman) in which the mantle is completely screened from the eye; in several cases those at the back of the room could hardly avoid being dazzled by the indirect view of the mantles when looking towards the blackboard. In several classrooms complaint was made of the light, and yet the intensity of illumination proved on measurement to be up to the standard maintained in the others. It appeared, however, that in each of these cases work especially exacting to the eyes, such as sewing, shorthand, or reading music, was carried on. It may be suggested that in such cases a higher standard of illumination is desirable, and also that special pains should be taken to exclude anything in the nature of glare. In many cases the increase in illumination might probably have been secured by throwing downwards some of the light which at present escaped and illuminated the walls. On the other hand, it must be recalled that rooms are often used for quite distinct purposes at different times, and must be lighted accordingly. For example, a hall may be used for a large sewing class on one night and for drilling on another. Perhaps the most severe task of all for the eyes, owing to the lack of contrast between the material and cotton, is sewing dark cloth with black thread.

Another gas-lighted school visited was that in Merton Road. This was mentioned to us as being a new installation. The standard of illumination proved to be well above the average, namely, $4\frac{1}{2}$ foot-candles on the desks; the black-

board lighting, however (1.7-2 foot-candles) was somewhat low, as a consequence of the opal shades used. The shades have the merit of almost completely covering the mantle, so that it is not likely to be seen by the scholars.

An excellent illustration of the recognition of the need for higher illumination in the case of special work is furnished by the Arts and Crafts School (Southampton Row). In the accompanying table the illumination in the various

Nature of Work			Style of Lighting	Illumination (Foot-candles)
Wood carving room	...	...	Local Pendants	30
			Shaded Lamps	
Architecture	"	...	Inverted Arcs	7
Silversmith's	"	...	"	4.5
Art	"	...	"	6.5
Bookbinding	"	...	"	8.0

rooms devoted to wood-carving, book-binding, &c., is given: it is of quite a different order from that met with in elementary schools. Some special devices for the lighting of a compositor's frame, jewellery work, and etching, are used. It is interesting to note that green light seems to be preferred for fine jewellery work. It may be added that throughout this building no case was met with in which the actual source was exposed to the eye, and the illumination, besides being high, was singularly free from glare.

In the Trade School for Girls (Bloomsbury) inverted arc-lighting is employed, as it also is very extensively in the Arts and Crafts School. In other rooms where machine work is done local drop-lights are used. The local illumination here is again high, from 4 to 8 foot-candles.

It was also thought of interest to secure permission to take measurements in the classrooms of a few of the larger public schools, and this was done in the case of Harrow, Dulwich College, St. Paul's, and the City of London School.

It should again be emphasised that these few data do not constitute anything in the nature of a report on the lighting in the schools visited; it would clearly be out of the question to attempt anything in this direction without much more exhaustive investigation. All that has been done is to make measurements in a few typical classrooms in each case.

At Harrow the big hall is lighted by several chandeliers carrying opal shades and frosted tungsten lamps. We understand that the hall is only very occasionally used by artificial light. The lamps are high up, but the distribution of illumination is not very even. Immediately below the chandeliers it is as high as 5 foot-candles, but on some of the back desks only 0.5; however, it is stated that the desks in these extreme positions are not often occupied. In the classrooms opal shades and frosted tungsten lamps are used throughout; the average illumination is of the order of 2 to 2.5 foot-candles, but the remote desks sometimes received slightly over a foot-candle. In summer no artificial light is required; in winter work goes on until 6.45 p.m. three days a week.

(To be continued.)

COVENTRY MUNICIPAL BUILDINGS.

AT the meeting of the Coventry City Council on Tuesday the minutes of the General Works Committee stated that the Town Clerk had submitted correspondence with Mr. Dawber and with Messrs. Garratt, Simister, Buckland & Haywood-Farmer, who were awarded first place in the competition for the new municipal buildings, as to the partnership subsisting between the latter gentlemen, Mr. Dawber stating that in his opinion the terms of the conditions and instructions had been complied with.

Councillor Halliwell said he was anxious to ask whether the assessor gave any reasons as to why in his opinion the terms and conditions had been complied with. When this matter was before the Council at its last meeting he (the speaker) gave certain information with the result that the Council took a certain course. Now it appeared there had been some communication with the assessor, and he (the speaker) would like to know what information the assessor had based his opinion upon. This matter was not going to rest where it was, as it was going before the Institute of British Architects in order to see that fair play was carried out. The assessor did not say whether he held that these four names were one firm or two firms. He (Mr. Halliwell) had evidence at the last meeting that they were two firms who had collaborated for this particular purpose.

The Town Clerk said that the assessor had reported that the firm in question had given a declaration that the plans had been drawn up in their office and had submitted a list of works carried out by them.

Councillor Wale asked whether it was a fact that Mr. Halliwell had in his possession anything which controverted the statement made by the assessor.

Councillor W. H. Grant said the Council left this matter in the hands of the assessor, and his decision was to be final, and he satisfied the committee as to the bona fides of the firm to whom the award had been made.

The Council confirmed the minutes.



[The Editor will not be responsible for the opinions expressed by Correspondents.]

Conference on Education and Training of Engineers, June 28-29, 1911.

SIR,—The Council direct me to give notice that they have made arrangements to hold a conference on the subject of the Education and Training of Engineers, at the Institution, on June 28 and 29. They are of opinion that the present is a desirable time to consider the methods of preparation to be adopted by those who contemplate entering the engineering profession, in compliance with conditions laid down by the by-laws for election into the Institution.

The requirements of the by-laws are: A sound general education developed upon lines suited to subsequent scientific study; a competent knowledge of those branches of science which form the basis of engineering; and practical training under actual engineering conditions, adapted—to quote from the last report of the Council—to fit persons to take part in the design, as well as in the control and direction of engineering works.

The report of the Committee on Engineering Education and training, adopted and published by the Council in 1906, made it abundantly clear that the broad principles of training indicated in the report are applicable to every kind of

engineering. There are, however, questions of detail and method involved in the realisation of those principles which are of great consequence both to students and to those under whom their education and their professional knowledge is acquired. It is mainly for the consideration of important questions of this kind, which experience has shown to deserve careful attention, that the Council have arranged the conference.

Its subject-matter will be dealt with in three groups, viz.: (1) General Education; (2) Scientific Training; (3) Practical Training.

The subjects selected for consideration are given below, and arrangements have been made for their introduction upon lines similar to those adopted in the former conferences of the Institution. A further communication will be made to you when the arrangements have been settled in detail.

LECTURE AND CONVERSAZIONE.

It has been arranged that the nineteenth "James Forrest" lecture shall be delivered at the Institution, at 9 P.M., on Wednesday, June 28, by Dr. F. H. Hatch—the subject being, "Gold Mining in the Transvaal"—and that the annual Conversazione shall be held in the Royal Albert Hall on the evening of Thursday, June 29.—I am, yours faithfully,

J. H. T. TUDSBERY, *Secretary.*

Great George Street, Westminster, S.W.

Subjects to be introduced for consideration at the conference:—

"The extent to which mathematical and scientific subjects should share with other subjects of literate education the attention of schoolboys who intend to enter later the engineering profession."

"The question of specialised entrance examinations for University or College courses of study in engineering science with a view to the curricula to be followed, and also of the inclusion in the latter of courses in modern languages."

"The relation of practical training to college study; whether, or to what extent, before, sandwiched, or after its conclusion."

"The position and uses of engineering laboratories in relation to education at college."

"The value of a University degree in engineering science in relation to professional competence."

"The requirements of practical training in works, with the necessary complement of scientific study."

"Practical training in workshops or on works of construction, with special reference to training in the engineer's office."

"The relation of engineering employers and colleges from the point of view of the practical training of college students."

"Workshop training as a preliminary to practical training in other branches of engineering."

Painters' Cradles.

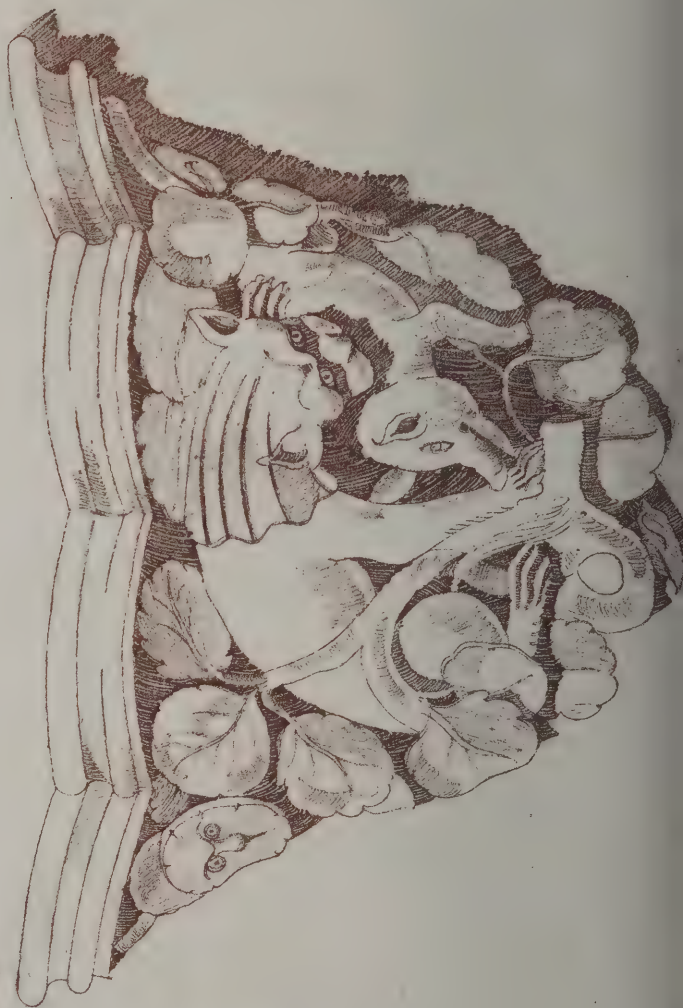
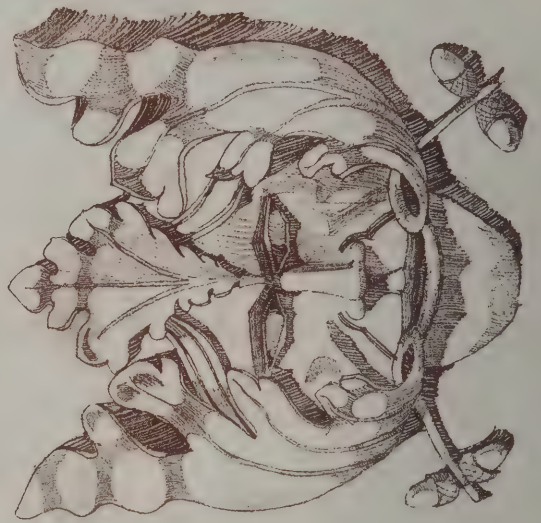
SIR,—We have with regret learned of the death of a man through one rope becoming free and allowing the cradle to tilt endwise, when the man slid out to earth.

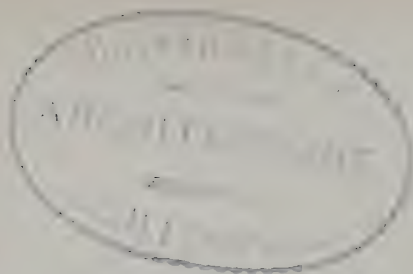
Similar accidents have previously happened, but being due to negligence of the men in not properly securing the ropes, we do not think measures have been taken to guard against recurrence.

No accident has ever happened with a cradle supplied by us, but there has always been a chance for such an accident, and therefore we think improvement can be effected, and will not patent the idea, but give it to the building world, namely (1) adopt upper pulley blocks having a brake fitted in them; (2) fit a door or pair of doors at each end of the cradle which, if kept closed, will prevent the men sliding out should the cradle tilt up.—Yours faithfully,

J. H. HEATHMAN & Co.

THE Renaissance, Elizabethan and Stuart furniture of the Rev. John Stephens, of Tooting Graveney, is to be sold on May 23 and two following days. It includes two rare Henri Deux cabinets of chestnut and walnut wood, as well as Italian, Flemish, and English examples of domestic furniture, some of which are illustrated in the pages of Macquoid and Cesinsky. There are refectory and side tables of Henry VIII., Elizabeth, and James I., old French armoires, Dutch cabinets, Italian brocades and embroideries, and a few pieces of seventeenth century Oriental pottery and porcelain. Messrs. Knight, Frank & Rutley's sale catalogue, which will contain photographs of the principal pieces, is now in preparation.





The Architect, May 12th 1911.



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CHIMNEY-PIECE IN BRADFORD TOWN HALL.

MR. F. E. P. EDWARDS, F.R.I.B.A., } Joint
MR. R. NORMAN SHAW, R.A., } Architects

WILD'S HOTEL.
EUSTON SQUARE. ~
PROPOSED REBUILDING.
F. DARE CLAPHAM FRIDA.





Detail of Library
at Battersea Polytechnic
for Edwin Tate Esq.

UNIVERSITY OF LONDON

LIBRARY

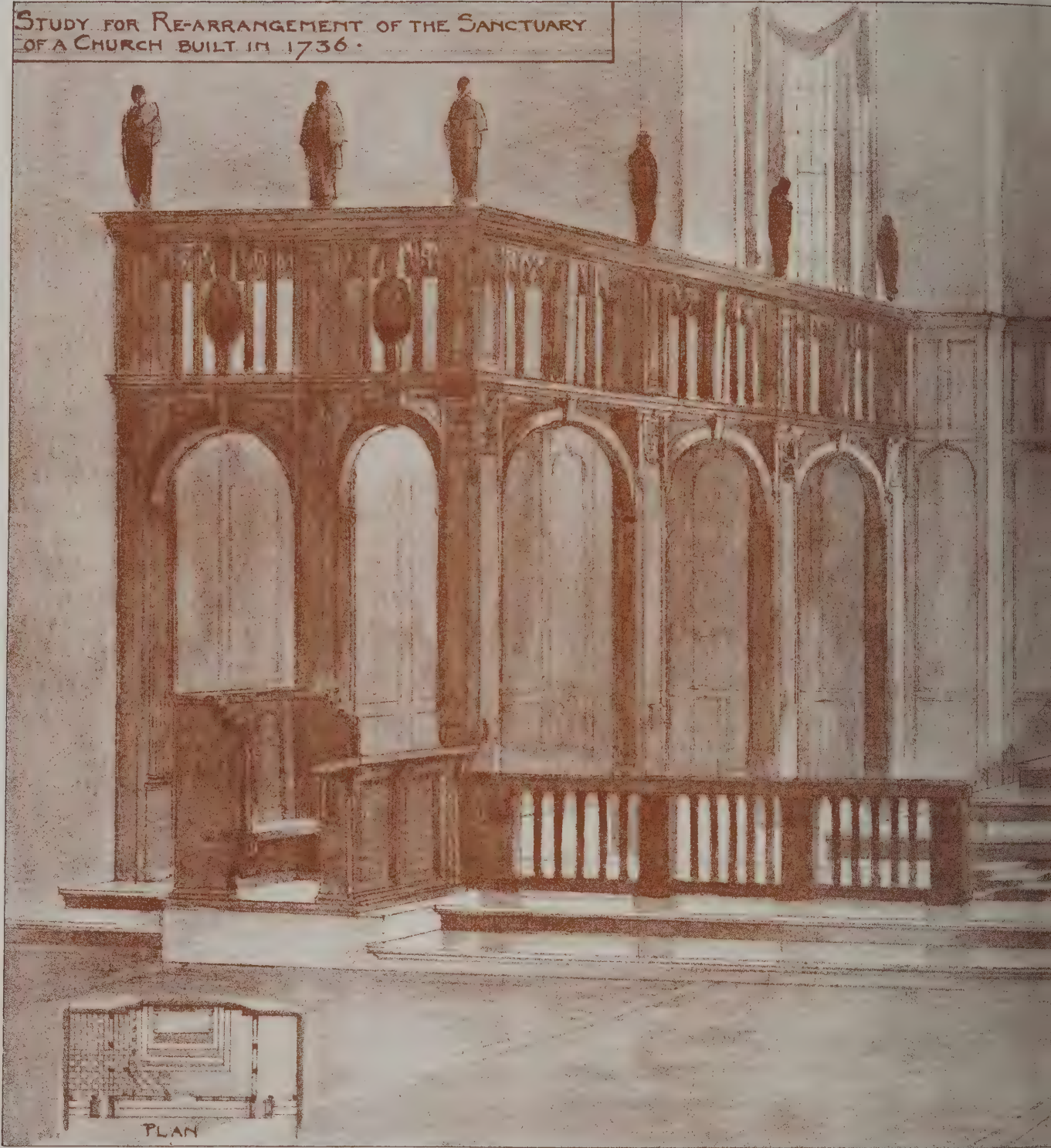
DETAIL OF LIBRARY AT THE BATTERSEA POLYTECHNIC.

Mr. F. DARE CLAPHAM, F.R.I.B.A., Architect.

Academy Exhibition, 1910.

INK PHOTO BRAGUE & C. L. 4 & 5 EAST HANING STREET E.C.

STUDY FOR RE-ARRANGEMENT OF THE SANCTUARY
OF A CHURCH BUILT IN 1736.



STUDY FOR THE RE-ARRANGEMENT OF

By Messrs. ROGERS



1911.



INK PHOTO 2 PRAGUE & CO. L^{td} 4 & 5 EAST HARDING STREET FETTER LANE, E.C.

CHURCH OF ST. MARY, BUILT IN 1736,
RICHARDS, Architects.

The Architect.

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FORTHCOMING EVENTS.

Saturday, May 20.

Northern Architectural Association: Meeting at Newcastle. Visits will be paid to (1) The General Post Office Extensions, and (2) The Northern Conservative Club's new premises.

Edinburgh Architectural Association: Visit to Aberdour and Neighbourhood.

Institution of Municipal Engineers: Visit to the tar-paving works and quarries of Messrs. Chittenden & Simmons, Ltd., Borough Green, Kent.

Society of Architects: Visit to Lambeth Palace.

Monday, May 22.

Royal Institute of British Architects: Mr. Lawrence Weaver on "The Interleaved Heirloom Copy of the Parentalia, and some Notes on the Wrens." Exhibition of Photographs of Wren's work.

Wednesday, May 24.

Royal Society of Arts: Mr. Frank M. Andrews (New York) on "Architecture in America."

Thursday, May 25.

Surveyors' Institution: Country Meeting at Liverpool (May 25-26).

Saturday, May 27.

Northern Architectural Association: Students' Sketching Club. Society of Engineers: Annual Dinner.

THE ENGLISH STAIRCASE.

WE are nowadays so accustomed to think of the staircase as the central feature of a house interior that it is hard to realise that until the sixteenth century it was architecturally considered little better than a ladder to an upper level. Until our forefathers became acquainted with the possibilities of the staircase as exploited on the Continent, and particularly by the artists of the Italian Renaissance, our English mediæval builders seem to have been ever oppressed by the traditions of the outside flight and the corkscrew turret of the Norman castle where such treatments in the days of hand-to-hand fighting had a distinctly defensive value.

But if we were late in our architectural use of the staircase, it cannot be denied that from the beginning of the sixteenth century its development has received a wonderful amount of thoughtful ingenuity and artistic endeavour that have placed it far in front of all other parts of our domestic interiors as a centre of interest and exponent of character. The character of a house is nowhere more clearly expressed than in the proportions, the dimensions and the treatment of the staircase and its adjuncts.

Therefore it is with pleasure that we welcome an excellent monograph on the English Staircase,* which is remarkable not only for the clear explanation that is given by the author of the historical development of the staircase in England but for the admirable illustrations. The historical account deals necessarily with the mediæval form of staircase, but deals with it briefly, and quickly passes on to the great change that took place with the introduction of the wooden type of staircase in the second half of the sixteenth century. Wooden in construction that is, although based largely as regards plan on the stone staircases of Italy. It is perhaps this peculiar combination that makes the beauty of our English staircase from the sixteenth to the eighteenth century and more particularly in the earlier part of this epoch. The dignity of Renaissance planning displaced the meagreness of the mediæval, whilst the use of wood rather than stone gave the charm of homeliness that is lacking in the Italian palazzo.

It is interesting to notice how in many of the earlier examples the tradition of the turret stair survived, and the thought of the age is reflected in the passage quoted by the author from BACON's essay of "Building," wherein although a stately staircase is recommended, it is stipulated that "in all the four corners of that court fair staircases, cast into turrets on the outside," should also be provided.

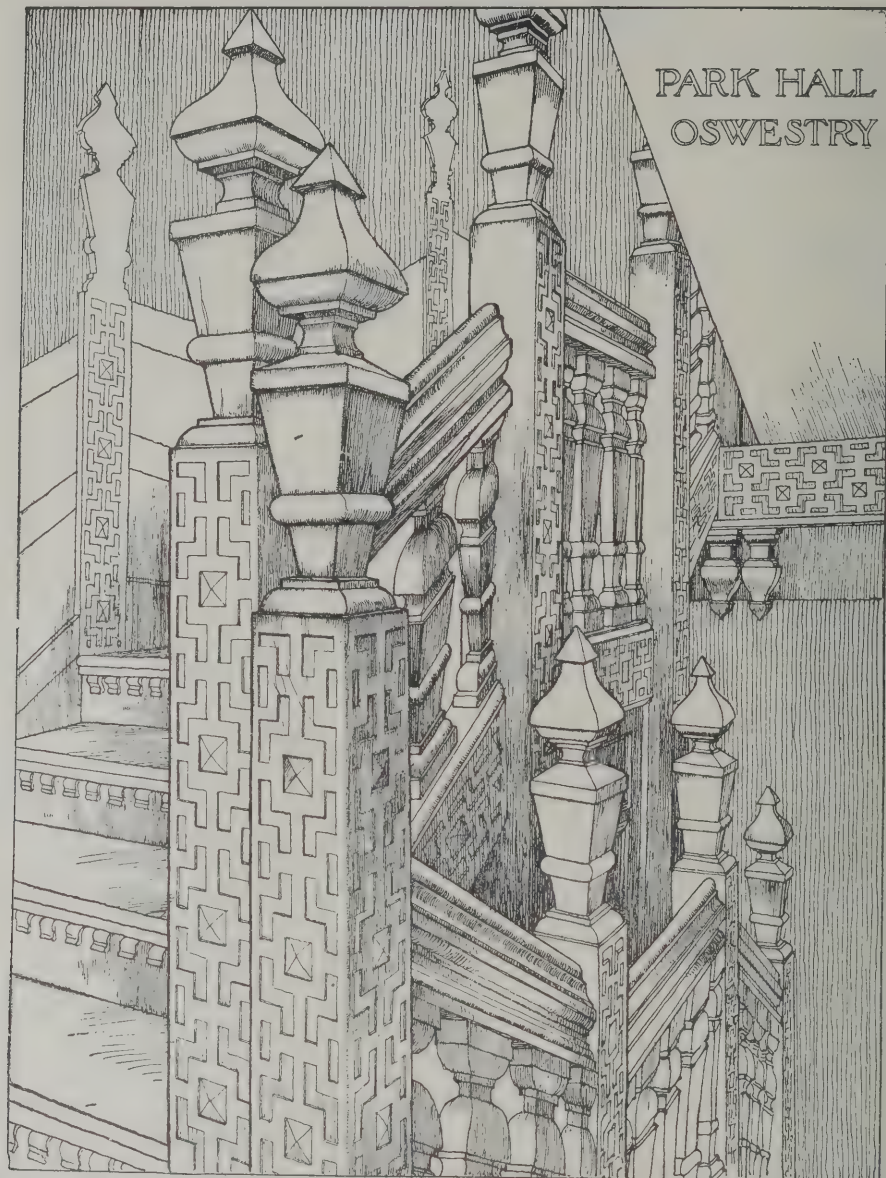
* *The English Staircase*, an historical account of its characteristic types to the end of the eighteenth century. By Walter H. Godfrey, architect, author of *The Life and Work of George Devey*, and *The Parish of Chelsea*. Illustrated from photographs by Horace Dan, &c., and from Measured Drawings and Sketches. (London: B. T. Batsford. 18s. net.)

The various stages through which the newel staircase passed before it gave way to the continuous handrail type is well elucidated by Mr. GODFREY, and with this he treats also of the evolution of the baluster or rather of the varied basic principles of the design of the baluster. Allied with this division of the subject is the treatment of a continuous balustrade or decorative infilling between handrail and close string, "made famous by the exquisite workmanship of GRINLING GIBBONS and his school of carvers." A very curious and interesting mediæval example of the continuous balustrade treatment is illustrated from Down-holland Hall, near Ormskirk.

In the eighteenth century there was undoubtedly somewhat of a loss when the possibilities of the continuous balustrade were negated by the general adoption of the cut string in place of the earlier close string. This, of course, meant the supremacy of the single baluster, which undoubtedly is far better suited to the horizontal lines of the cut string than to the raking one of the close string, which latter always suggests that the balusters standing on the slope are in danger of slipping down. There can be no question that, æsthetically, continuous balustrades are the more satisfactory treatment for close strings and single balusters for cut strings.

To our mind some of the least pleasant examples of staircase design are the attempts of eighteenth-century designers in their employment of wrought-iron balusters with stone steps or cut wooden strings to attain the effect of a continuous balustrade by connecting the balusters and distorting them to fit at one and the same time the horizontal lines of the steps with the raking line of the handrail. We cannot even admire the efforts of ROBERT ADAM in this direction, of which examples are given by Mr. GODFREY. One might perhaps forgive the balustrade on the rake if it were always accompanied by such a masterly treatment on the level as is illustrated from No. 35 Lincoln's Inn Fields. Nor need we cavil overmuch at such a design as that of the iron balustrade shown from Chesterfield House, London; but it will be observed that here the balustrade is entirely on the rake, which is followed by its base line, this being merely supported, accidentally as it were, on the horizontal steps. Yet one cannot help feeling even in this instance how much more satisfactory would have been the effect of a close string of marble.

It is curious that in the last phase before what Mr. GODFREY terms the "decline of the staircase" there should have been a reversion in general plan to the circular stair of the mediæval builders, minus the important constructive central newel. Thus "the long continuous line of the balustrade curving in one sweep from floor to floor . . . was the goal of the Georgian designer: the subservience of every part to the upward gliding plane of the stair itself." Hence the decline. The flowing line

[From *The English Staircase*.]

being paramount, all the charming detail, the change of light and shade, the conjunction of level and raking lines that are so important as components of earlier staircase design are lost, and bathos results.

By the courtesy of the publisher, Mr. BATSFORD, we reproduce two of the many admirable illustrations in Mr. GODFREY's book; for the best of them, the beautiful colotype reproductions of excellent photographs, we refer our readers to the volume itself, a perfect treasure-house of exquisite detail, pregnant in suggestion and teeming with delightful instances of the wealth of artistic expression to be found in old examples of the English staircase.

THE ARCHITECT IN INDIA.*

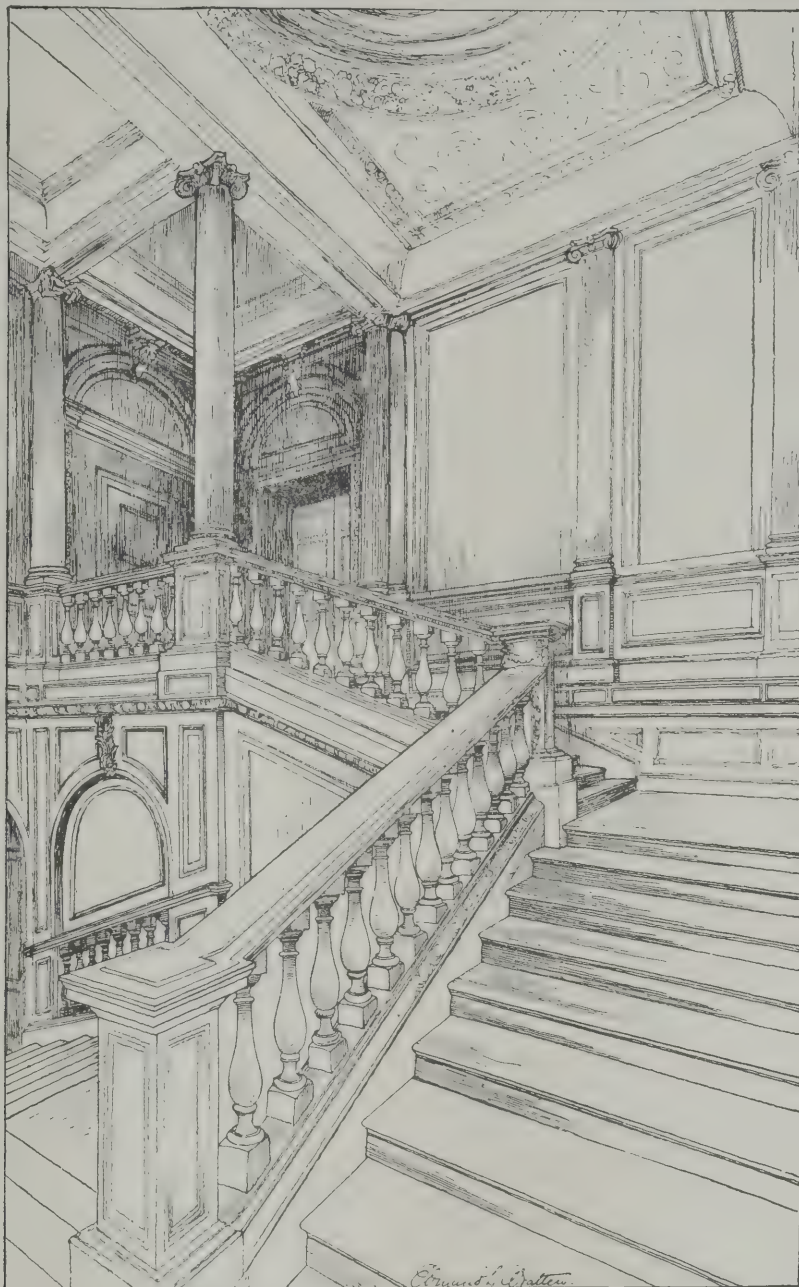
By J. BEGG, F.R.I.B.A., Consulting Architect to the Government of India.

I CONFESS to having had a strong temptation to attempt an address on the architecture of India from the more purely archæological point of view. Though I have no wish to associate myself with those who are accustomed habitually to laud the ancients at the expense of the moderns, yet I cannot help admitting that, so far as India at least is concerned, it is decidedly the ancients who "have it" in the matter of architecture. I cannot help feeling that a very much more fascinating paper could have been prepared for you on the old work of the country than on the new. It would seem like a flagrant neglect of opportunity were I to omit to consider those glorious examples of the work of the

past which make India unique among the countries of the world in the possession of architectural gems of the highest possible order of merit. Clearly one should speak of the rock-cut work of Ellora, Tanjore, Elephanta, and Kar. of the Taj Mahal at Agra, of Fathpur Sikri, of Delhi, Ahmedabad, and above all, of that fascinating field of study where are to be seen the grandest and most masculine examples of Mohammedan building in India, the all but deserted city of Bijapur in the Deccan. But I have no alternative other than to commit this very solecism. I have no right to dwell on these glories of the past for the reason that, archæology having (for certain sufficient administrative reasons) been divorced from her consort architecture, have had no more than ordinary opportunities for studying it. In fact, I have had less than ordinary, for (so close has my nose been kept to the particular grindstone allotted to me) during my ten years of service in India I have never been able to spare time for travelling beyond the range of my actual duties. Bijapur, Ahmedabad, and Delhi are the only great archæological centres to which my work has called me; while Agra, Fathpur Sikri, Ellora, and the rest I have, so far, not visited.

I must, therefore, confine myself to a consideration of architecture in India from the point of view of the present-day architect. In the problems which he finds to tackle in the country, as he drives across comparatively unbroken ground his rather lonely furrow, I think I shall be able to show you sufficient to justify my claiming your interest and attention. I shall further limit my subject by concerning myself mainly with the work of the official architect—shall I say, with the building work of the Indian Public Works Department. I need not, however, tell those of you who are familiar with Indian conditions that the latter

* A paper read on May 16 before the East India Association.



[From The English Staircase.]

STAIRCASE AT ASHBURNHAM HOUSE, WESTMINSTER.

limitation is not by any means so formidable as it would be in most countries, or is such as to prevent our obtaining an adequate view of modern Indian architecture. Official design and building work still bears, and must bear for yet a long time, a ratio to the aggregate of work in the country in enormous excess of what it does, say, in England. This is so not only by virtue of its actual bulk, but because it leads the way, and will, I hope, continue to do so till a respectable tradition has grown up sufficiently to render our leadership no longer a necessity. That won't be, I fear, in our day, nor yet in the day of the next generation of our fellow-workers, nor, perhaps, of the next again. It won't be till India has so advanced that we are able to relinquish our leadership in other professions too—in law, in medicine, in engineering—and pretty much in the order in which I have named them, architecture coming last of all. I wish, you see, to start fair by avoiding giving the impression that I am over sanguine. India is a country of slow movement. In certain directions very slow.

The design and construction of the buildings of modern India is, then, for the most part, in the hands of the Indian Public Works Department—a service officered by men specially selected and specially trained—or till lately specially trained—for their work. When I say "specially trained," however, I do not mean to imply that they have been trained as specialists. Quite the contrary. Their work has certainly ranged over a wide field, a field embracing many kinds of specialism, such as railway work, irrigation, architect's work, &c.; but the men themselves

have not been largely encouraged to specialise, but rather to acquire a general training in the practical and theoretical considerations bearing on the varied work they are called on to take charge of. Though they enjoy the generic title of "engineer," it does not follow that that title is the best or most accurately descriptive one for them, or that it would convey other than a vague idea of what they really are to anyone unacquainted with Indian conditions. While some of them have been drawn from the Royal Engineers, some from the ranks of the civil engineering profession, and some few, like "Topsy," have "just growed," the majority owe their training to the special colleges, principally to the late Indian Engineering College at Cooper's Hill. But for the typical Public Works Officer the term "engineer" afforded quite an arbitrary and by no means accurate definition. He was not—he is not—an engineer quite as the term is understood in England or in Europe generally, and he has merely been called so because his most direct professional progenitor was perhaps the Royal Engineer. He might have been called "master of works," or he might have been called "architect," and it is certainly probable that, had it been expedient to recruit him from the ranks of any one existing orthodox profession in Britain, the particular blend of engineer, architect, administrator, and honourable gentleman necessary for the conditions of his life and work would have been more readily found among the members of the profession of the British architect than of any other ready to hand. I say this because it is the architect who is really the all-round man, while the engineer is the specialist—the

man who has specialised on what is essentially and *ab origine* a branch of architecture, namely, *construction*. Also because the architect's training teaches him to go by something beyond mere figures and formularies. It involves the cultivation of what might be called a *sense*, and is, therefore, calculated to make him adaptable and to aid him particularly in new and strange conditions.

Times have changed and work conditions have progressed in India. Railway work has long been definitely recognised as requiring specialists. Irrigation may be said to have followed suit. Electricity has invaded the country, and has brought the electrical specialist in its train. The generally-trained "engineer" is still, as he must needs be, in a numerical majority, and is concerned with the vast mass of work involved by repairs, maintenance, and other petty works, by road making, bridge building, and general works administration, but with little of original or creative work to do which is not building work, and, as such, directly within the sphere and competence of the architect. When I remind you that Cooper's Hill College is no more, and that all its splendid machinery for the training of the Indian Public Works officer has been scattered to the four winds (a measure, however, at which I do not wish to cavil), and when I further remind you that, retaining the arbitrarily acquired name of "engineer," recruits to the Public Works Department are being poured into the country from among the younger members of the civil engineering profession in Britain, to the all but total neglect of the architect's profession, you will understand that a situation has arisen which can hardly be regarded by the architect with a large amount of equanimity.

There is a temptation to exaggerate the gravity of the situation, and it would be easy for the architect to do so. But I want to be quite fair in my statement of the case. I do not want to pretend that the architecture of the Public Works Department has been contemptible. It has not been so. Many of the more important buildings of India, if not looked at too closely in detail, though, of course, in a sense amateur work, are distinctly above the average of such work. I would instance the High Court and Public Works Secretariat of Bombay. I might also mention the Victoria Terminus of the same city, though the latter is hardly an example of official designing, for Stevens, its author, had abandoned Government service before he did it, and, besides, being a genius, is not a man to be judged by ordinary standards. On the whole, India may well challenge any country in the world to show an equal number of amateur buildings more or less free from glaring architectural solecisms, more nearly approaching the standards of the professional designer. It is not to be wondered at. Necessity is the mother of invention. In the almost entire absence of architects, India invented for herself some very fair substitutes—just as Simla, in her dire need of professional actors, has produced some by no means contemptible acting on the part of her amateurs. In architecture a certain selective process as to men has certainly been at work in India, and it would be hard indeed if clever men—and there have been clever men—with their backs to the wall, and working on first principles with plenty of practice and a considerable amount of funds at their disposal, with ideal building sites and good materials, should not have contrived to give themselves some sort of a training, and stumbled on some of the genuine secrets of design. So much for the past. Nor must we be too pessimistic as to the present and the future. In 1902 the Secretary of State, moved by the then Viceroy (Lord Curzon) created the post of "Consulting-Architect to the Government of India," and appointed as its first incumbent a trained architect in the person of Mr. James Ransome. That was a great step, and the idea prompting it was a great idea for architecture. But it was not a new idea entirely, for the Government of Bombay had at that time an architect in their employ in the person of myself. When I first went to India, at the beginning of 1901, I was, I believe, the only architect-trained architect in Government employ in India. There are now seven of us, and soon there may be eight. The time can, I think, hardly be long delayed before every province and administration of any importance in India has its architect with his properly equipped staff. But even then it will be no more than a step which has been taken in the right direction. This handful of men can do no more than touch the fringe of the vast mantle of bricks and mortar which the continent of India requires continually to be weaving to veil her growing sense of nakedness. At best they can do no more than design a comparatively small number of the more important buildings which every year must rise up in re-

sponse to the increasing needs of the country. And these they can merely "design," as it is called, leaving the equally, if not more important, branch of the architect's work—the building—still in the hands of the amateur. "Design," as it is called, I say, for no man can design properly who is not in constant practice at actual building work. Similarly, no one can properly build who is not an expert designer. However skilled an engineer he may be, he must still be to some extent, as I have styled him, an amateur. That is why I say that the situation cannot be viewed by the architect with equanimity. Seven new architects in ten years is not enough.

The best, therefore, that can be said of the architectural work of India is that it is in the hands of an agency made up for the most part of intelligent (and certainly zealous) amateurs, with a small leaven of professionals. These latter are necessarily in comparatively subordinate positions—that is, they are merely in advisory positions. They may advise, but it by no means follows that their advice is followed. In a great many instances it is not followed fully and unreservedly. The fact is that, with the best intentions on the part of those in authority, it is too often impossible to give effect to the architect's advice, for the reason that the machinery, so to speak, for carrying out his advice is of the nature to which I have applied the term "amateur"—that is, amateur from the strict point of view of the professional architect. A surgeon may advise that a certain operation should be performed in a certain way, but unless he performs it himself, or can rely on its being done by another competent surgeon, his advice can certainly not be followed. This illustration, it is true, is robbed of some of its poignancy by the fact that, thank Heaven! we have practically got rid of amateur surgeons, whereas the world is largely peopled by amateur architects. And we do not want to get rid of the amateur architect. He is, in some respects, the best friend of the professional, to whom he affords real help and stimulus; and it is from among the number of these amateurs that the architect finds his most genuine admirers and effective supporters. He is not to be got rid of; merely to be led and restrained. But, I ask you, how can the seven newly-imported architects of India hope to lead or restrain the hundred thousand more or less who fill the stage? Let me rather take the illustration that is suggested by the last word, "the stage." The professional actor may advise, he can even show how a passage should be rendered. But can he hope that his amateur pupils, however well intentioned, however intelligent, however humbly desirous to learn, will be able to follow his advice? Now, the amateur architects of India, be they operatives or engineers or administrators, though well intentioned and by no means unintelligent, are seldom humble. Their life, their training, their traditions, their seniority, and the amount of their pay, compared to that of the architect's, none of these things make for humility or docility in this connection. As things are in India, *humility* is hardly a quality to render a man an effective servant of the Empire.

May I now allude to some of the difficulties which this new breed of architects have to face in India? Chief amongst these is, perhaps, the prevailing misconception as to what an architect is and does. It may astonish architects to hear that, when I first went to India ten years ago, I found it to be universally held that the architect had nothing to do with the *erection* of buildings. The man who saw to that was the engineer! Materials, strains and stresses, thickness of walls, strength of piers, beams, girders, and trusses, contracts and work arrangements of all kinds, together with the prices that should be paid for labour and materials—these were all beyond the architect's province. Further, matters such as the number, size and arrangement of rooms, their lighting, whether by windows or artificially, their ventilation, &c.—in fact, the planning and entire conception of the building, here the engineer was held to be the proper authority, and for none of these things was it considered fitting that the help of an architect should be obtained. People would not believe me when I told them that all such things were the commonplaces of the architect's daily work in England, and, in fact, everywhere else but in India. Even such things as decoration and the colour of the paint to be used, whether internally or externally, were supposed to be quite beyond the province of the architect. The engineer was apparently the man to settle all that, and he frequently left it to his subordinate, who left it to the painter, who, in turn, might save the situation by consulting the wishes of the prospective occupant of the building. Such a state of topsy-turvydom had to be experienced to be believed.

What then, it may well be asked, was the architect supposed to do? Upon my word, I do not know. I believe that a few of the more enlightened considered he was concerned with the exterior appearance of the building—the appearance, that is, so far as the mere form of decorative details went—for colour, whether applied as paint or by the choice of materials, was certainly denied as being within his competence. I was thought to be seeking unduly to magnify the importance of my functions when I either sought to do otherwise than confine myself to the narrow limits of exterior appearance or represented the architects of other countries as doing otherwise in the ordinary course of their duties. I think that, had we taken our official superiors at their word from the first—had we not, in spite of frequent discouragement, followed our own line to some extent—the office of Government Architect would have been a sinecure indeed.

The architect in private practice in India has an easy way of meeting this ludicrous misconception of his functions. He simply inscribes his brass plate with the words "Architect and Engineer." But the official architect has no voice in the choice of his designation, and must accept that, with his work, as each comes from his official superiors, and there has been no lack of work for us. I suppose they must have found us useful. I can point to one curious instance of some years ago. A Government architect was ordered to prepare the detailed designs for a large and important bridge, involving alternative treatments in stone, steel, and reinforced concrete, though it was admitted that this, at least, was certainly not within the officially recognised category of his duties. All the while the engineer to whom the duty would naturally have fallen was engaged on the design of a big block of residential flats. The architect did suggest that perhaps an exchange of work might be effected, but this was met with the coldness such presumption deserved. Yes, they must have found us useful—more useful, I think, beyond our acknowledged province than within it. I am glad to say that much of the misconception has been lived down. Before I left Bombay in 1906 to take up my present appointment with the Government of India, the Government of Bombay had sanctioned the establishment in my office of an executive branch and the entrusting to me of the construction of all more important buildings designed in the office. Generally speaking, the architect is becoming more and more freely admitted to the councils of the Public Works Hierarchy on an increasing number of matters connected with his calling.

Then there are the difficulties an architect finds in getting his details, specifications, and other instructions understood on the works. Neither the workman nor the Public Works subordinate has been sufficiently trained in what is known as the "reading" of drawings, and the engineer is not able to afford the time to explain things.

But a more formidable trouble is the absence of any reliable source for the supply of capable assistants. In Europe, especially in the towns, there is no lack of these, and they can be got to work for surprisingly low wages—even for love—for the sake of experience. The Indian Public Works Department is able, by virtue of its long establishment and the considerable figure it makes in the public eye, as well as from the fact of the existence of several engineering colleges, to obtain an adequate supply of subordinates sufficiently trained for its ordinary requirements. But the architect's requirements are of a very different nature. The ordinary Public Works subordinate is of little or no use to him. Moreover, he requires the assistance of men of a different class than can be made to pass muster under the more perfunctory and routine character of the ordinary Public Works Department work. It therefore follows that the architect, when he goes to India, has very considerably to modify his methods if he is to get through his day's work at all; and it also follows, alas! that he cannot turn out his work with the same amount of completeness and thoughtful care as at home. This circumstance militates grievously against his success, for so much less skilled are all through whom his ideas and instructions have to be transmitted to the workmen—his own immediate staff, as well as the overseeing machinery of the "executive engineer"—and so much less skilled are the workmen themselves as compared to those he has become accustomed to at home, that to obtain equal results he ought to employ superior rather than inferior methods, to give fuller rather than more scanty instructions and details.

Towards the diminution of this difficulty various schemes are under consideration. There is the proposed establishment of a thorough system of pupilage in the existing architects' offices. There is the suggested sending home of

approved architectural pupils to complete their studies in Europe. The Bombay School of Art is doing good work with training classes for architects' assistants, and other schools in the country may perhaps be induced to follow. But all the schemes bristle with difficulties, the chief of which arises from the fact that the better class of Indian youth does not often seek to follow architecture as a profession, either because his order of mind is not "built that way" or because his attention has not yet been sufficiently turned to the profession. Your young educated Indian of good class seeks to become a lawyer or a doctor, or a few aim at being engineers, though I must say they have hardly yet shown that, as a race, they possess outstanding aptitude for the latter calling. But the few who have essayed to become architects have not hitherto been generally of a class or of an education to fit them to take the necessary training, and the native architect has hardly yet arisen who could satisfy the most moderate professional requirements. Meantime the country is overrun by clerks—clever, highly educated, and only too glad to work for exceedingly low wages. If but a small proportion of them had thought of becoming architects, and if the means had existed for training them at the proper stage in their educational careers, the architectural profession in the country, both private and in Government service, would be in a more hopeful position to-day. This is a state of things which every well-wisher of India should be glad to see altered, if for no other reason than to provide one more little outlet, among the too few that exist, for the energies of a growing class of young educated Indians—growing in numbers as in discontent with the faint promise of careers that the future seems to hold out for them.

It would be a great thing for India if she could be put in the way of having a strong, living architectural profession of her own, and of being more or less self-contained in the matter of providing its personnel. Her arts are dead or nearly so, and her crafts are little better. The Indian workman has become a complete master of one art only—that of scamping—and it is a rare thing to find one who takes a real pleasure in his work for its own sake, or for any other sake than that of the expected pecuniary reward. The taint of commercialism, at its crudest, poisons his whole outlook, without, as yet, the virtue that should accompany it—commercial honour. It is architecture which is the great mother of all the arts and crafts, and it is the architect alone who, as the lineal descendant of Tubal Cain, can, I believe, inspire the craftsman with that pride in his work which is the sure antidote to a too exclusively commercial outlook. I know from more than one happy experience that the Indian workman can be so inspired; and I believe that if there were only more of us, and if we were of the right sort—the sort to bring with us enthusiasm for our work—then the crowds of Chinese carpenters and smiths, for instance, who have obtained a practical monopoly of their respective trades in Calcutta and elsewhere, would soon have to pack and go.

And think of the civilising effect which it would have on the country if we could only get the crafts set on a proper footing. The very foundation of a modern nation's progress in civilisation is surely work—sound, honest, joyful work. I cannot see that that foundation has yet been laid in India, or that such of it as was laid by the Moguls centuries ago is being used sufficiently to support the structure we are labouring to rear. Looked at from this point of view, it seems to me that in the progress of the architectural profession in India we might have a big thing, and in the architect's mission a big mission.

But some may say that India is not a modern nation—rather a collection of tired remnants, the refugees, one might say, of many old ones. Quite so. But what have we been doing for the past hundred years if not trying to make it conform to the ways of modern nations—to make it, in fact, a modern nation? And I think we are not only beginning to succeed, but are beginning to recognise our success. At any rate, I take it as a sign of the latter that British public opinion is at last venturing to question the eternal wisdom of the saying as to East and West that "never the twain shall meet." When so stubborn a thing as British public opinion shows a sign like that of adapting itself to the times, surely there is hope for even the slow and stubborn East. Just as the India of the past can show some of the world's greatest architectural achievements, so we may rest assured that in the present and future she has the main essentials for holding her own with other nations in this respect. She has a wealth of fine building materials in her various grades of basalts, freestones, marbles, and granites;

slate, tiles, bricks, and lime. She has a certain amount of indigenous timber, and a ready access to the teaks of Burmah and the gums and other timbers of Australia. Then her climate conditions and ways of life demand large and lofty rooms, and that all goes to make for a broad, big, and masculine type of building design, in which dignity and grandeur of manner are encouraged by the formality and ceremoniousness that are associated with her traditions in the conduct of government and public affairs generally. Moreover, in the larger aspect of architecture—that concerned with the planning of towns and cities—there is endless opportunity, nay, even crying need, for the architect's best efforts. That is a lesson which has been learned within the last ten or twelve years during the operations of the Bombay Improvement Trust. Calcutta is now starting an Improvement Trust of her own. May we hope that that city will be so wise as to profit by Bombay's experience in this respect?

Meantime, in judging of the architecture of the present day there is just this to be borne in mind. It is neither so admirable a thing as certain amateur enthusiasts are wont to represent it, nor is it so contemptible a thing as it is apt to appear to the severely professional critic, accustomed to see the work of our best men at home. I would in particular emphasise the latter aspect of the case in so far as our work is seen from this side of the water. I would ask you to bear in mind the enormous disabilities under which, as I have pointed out, the work of the architect in India is carried on, and would plead for a correspondingly sympathetic and lenient judgment of results. If you think me unwise in giving this apology too much the form of the excuse that accuses, I would ask you to bear with me in this also. The architect is of necessity somewhat of an irritable creature, and these remarks are written after ten long years without a break of continuous anxious work, contending with the difficulties I have just been indicating. Under these circumstances, some degree of pessimism is hardly to be wondered at in contemplating one's efforts. But, at the same time, I do pretend to a very real optimism with regard to the future, from the point of view which also I have tried to indicate to you. While disclaiming the desire to pose as prophet, I think I may at least ask those of you who are interested in architecture generally, and in Indian architecture in particular, to keep a sympathetic eye on the work of the Public Works Department, and to declare my confidence that the progress you see will not disappoint you. Do not look for any startlingly individual development of a "style," as the term is popularly understood, for the individual character of a real living style can never be judged by the generation that produces it. But look for buildings designed alike with honesty, with thought, and with common-sense, as with the quality of "style" in the bigger sense—that quality which is hardly definable, and which is best conveyed to my mind by the expression of a Scotch architect friend—"the real crack of the whup!" Look for those buildings showing the qualities of sound, honest workmanship, and inquire whether there are still in Calcutta as many Chinese carpenters as ever.

THE Royal Sanitary Institute will hold a provincial sessional meeting at Exeter on June 2 and 3. The meeting on Friday, June 2, will be held in the Royal Albert Memorial, University College, Exeter, at 7.30 p.m., when a discussion will be opened on "Ventilation in Theory and Practice," by Mr. J. Jerman, F.R.I.B.A. It is hoped that the following will take part in the discussion: Mr. George Adkins, Medical Officer of Health, Devon C.C.; Principal A. W. Clayden, M.A., Exeter University College; Alderman Chas. Cole, architect and surveyor, Exeter; Mr. James Crocker, F.R.I.B.A., Exeter; Councillor R. M. Challice, architect and surveyor, Exeter; Mr. S. Hutton, surveyor, Exmouth U.D.C.; Mr. Percy Morris, F.R.I.B.A., education architect, Devon C.C.; Mr. Thomas Moulding, M.Inst.C.E., city engineer and surveyor, Exeter; Mr. P. H. Stirk, school medical officer, Exeter; Mr. C. J. Vlieland, M.D., assistant M.O.H., and Mr. W. J. Wreford, sanitary inspector, Exeter. A general discussion is invited. The chair will be taken by Mr. H. Percy Boulnois, M.Inst.C.E. (Chairman of the Council of the Institute). On Saturday, June 3, at 10.30 a.m., members will meet at the Guildhall, Exeter, and proceed to visit the sewage disposal works, septic tank system. In the afternoon the members will reassemble at the Guildhall, Exeter, and proceed by brakes to visit the Corporation waterworks at Pynes.

TEMPERAMENTAL ARCHITECTURE IN THE NEW YORK CATHEDRAL CHURCH OF ST JOHN THE DIVINE.*

By WM. H. GOODYEAR, M.A.

Curator of the Department of Fine Arts, Museum of the Brooklyn Institute; Hon. Member, Society of Architects of Rome; Hon. Member, Edinburgh Architectural Association; Hon. Member, Royal Academy of Fine Arts of Milan; Hon. Academician, Royal Academy of Venice; Corresponding Member, American Institute of Architects.

THE recent dedication of the Cathedral of St. John the Divine offers an appropriate occasion for the consideration of certain architectural refinements which are used in the choir and which were suggested by mediæval precedents thus reviving principles which found very widespread application in the old cathedrals. Mr. C. Grant LaFarge has already touched upon this matter in the article which he contributed to "Scribner's Magazine" in April 1900 (p. 400).

The fact certainly merits all the prominence and emphasis which can be given to it, that the choir of this cathedral has an asymmetric plan, that its arches and pier spacings are asymmetric, and that its pavement is built to slope upward toward the eastern end of the church. The firm of Heins & LaFarge was thus the first in modern times to revive those intentional asymmetries of dimension and plan which are so frequently found in mediæval architecture and to which the Brooklyn Institute architectural exhibition is devoted.

With the exception of another and earlier asymmetric plan (at Methuen, Mass.) by the same firm, St. John the Divine appears to be the first instance of a modern revival of mediæval constructive asymmetry.

This fact has additional interest because Mr. Heins has formally announced and explained his own point of view on the subject of "refinements" in the article under the title which he contributed to the Sturgis-Macmillan "Dictionary of Architecture," and because further matter on the same subject may be quoted from a personal letter which he wrote only a few months before his lamented death.

The circumstances under which this letter was addressed to me, in 1907, may be first mentioned. It may have been about 1898, and during or soon after my report on the Brooklyn Institute architectural research which appeared in a series of articles in the "Architectural Record," that Mr. Heins first made known to me that his firm would introduce refinements in the choir of the cathedral. It was a little later that the original manuscript of his article for the Sturgis "Dictionary" was confided to me. This manuscript was of very much greater length than Mr. Sturgis had been able to publish in the "Dictionary." Meantime it was understood between Mr. Heins and myself that the firm did not care to have public mention made of the use of refinements in the choir until it was actually built.

In 1907 the choir was so far finished that this temporary restriction on public mention was withdrawn. I was then making plans for a book which is still unwritten and, with this book in view, asked Mr. Heins to furnish for the publication his own account of his reasons for introducing the asymmetries of construction. Some passages from his reply follow here, and it will be observed that one of them includes the permission to publish an account of the choir.

Lake Edward, P. Q., May 28, 1907.

Dear Mr. Goodyear,—

Your note came just as I was in the final agony of breaking loose for a couple of weeks in the woods, which is my apology for not having answered at once. I hope this will be in time * * *. The way all these refinements appeal to me is the way the wood appeals to me. If the trees were all alike I should be tired of them in an hour—just as much as one would tire of living in a street where the houses are "built in a row." It is unnatural to make things all alike and I do not like them so, but cannot give it a name. It seems as though we had become so accustomed to machine-made repetition as to find it difficult to express repugnance for the system—just as it is said that if a man is imprisoned long enough will object to being set free—the idea of having to make a choice of his own initiative becomes terrifying. I can only say that the idea of modulation and refinement seems to me covered by the word "art" and artistic, but I have no word in my vocabulary to express the antithesis, except to say that such things are ugly and unpleasant and repellent. We have words to express both sides of other things: good, bad; true, false; hot, cold; but art (?) what?

* This article was written by special request of the editors of the *New York Architect*, and appears in the current issue of the Magazine.

I maintain that refinements and modulations belong to the domain of art, though they are not all of it. *They are indispensable to a building that shall continue to please people of discernment for centuries after its erection. In other words they are indispensable to a work of art.**

Do not hesitate to publish whatever you determined upon with Mr. LaFarge. Our hesitation was only of temporary quality, as you understand.—Yours very truly,

G. L. HEINS.

Before quoting from the general views of Mr. Heins about refinements, as farther expressed in his contribution to the Sturgis "Dictionary," it may be well to describe a little more closely the special nature of these refinements in St. John the Divine.

The pavement of the choir has a rising slope toward the east of six inches. The arches are of discrepant sizes, with variations in the height of the capitals. There are also variations in the spacings of the piers. The lines of the piers converge in plan toward the east, to the amount of 19 inches in 57 feet. They diverge, to a corresponding extent, from the outer walls. To quote the exact words of Mr. LaFarge in the "Scribner" article: "It is with the desire to avoid to some extent the banal aspect of mechanical regularity that certain refinements are practised in the cathedral. The choir arcades are not parallel, but converge slightly. Their springings are not level; the spacings of the arches of choir and ambulatory are unequal; the floor slopes upwards to the east and the great columns are unequally spaced."

Mr. LaFarge has also quite recently furnished me with the following statements:

Taking first the high arches which are in pairs at either side of the choir, the western arch has a radius of 10' 6", and the eastern arch a radius of 10' 0". The caps from which these arches spring, taking the western cap as zero, lift as they go east, the middle cap being up 18" and the eastern cap 3' 0". This last level is then carried around for all the arches springing from the great columns of the apse.

Taking next the lower arcades under the organ galleries, these being on each side in two pairs, each pair coming under the single high arch, and continuing from east to west, the radii are as follows:

First arch	4'	7"
Second arch	4'	10"
Third arch	4'	6"
Fourth arch	4'	4"

The caps engaged in the piers from which these arches spring are all on a level, but the caps of the free standing piers which occur at the meeting of each pair of arches are up 6". * * *

Any variation from these figures would be very slight, and would not be important.

Mr. LaFarge adds to these figures others for the arches, still to be built, opening from the great crossing into the (unbuilt) transepts and into the (unbuilt) nave.

As designed, the present, or eastern arch, which opens from the crossing into the choir, springs from a level 16 feet higher than the arches opening into the transepts, and 25' 6" higher than the western arch at the nave; that is to say that, starting from the east end of the nave, the transept springing lifts 9' 6", and the choir springing 16' 0" above that.

I personally consider this, as did my late partner, one of the very finest elements in the whole design of the interior.

My belief about it, and my reasons for it, are clearly set forth in my article which was printed in *Scribner's Magazine* of April, 1907.

The lifting of the effect of the choir by these successive rises has precedents in S. Paolo Ripa d'Arno at Pisa and in the Cathedral of Monreale. In the first-named church, which is comparatively a small one (145 feet long), the last bays of the nave rise above the preceding ones, 2.22 feet, south side, and 1.23 feet, north side, while the transept arches are from 12 to 14 feet higher.

The widths of the same bays of the nave increase 9½ feet, south side, and 7 feet north side (from 16.20 to 23.76, south; from 16.38 to 23.33, north), thus approximating closely to the width of the transepts, which is 24 feet.

The changes of width and height are not noticeable (for which parallel cases will be mentioned later), and as regards the height the effect is one not only of uplift, but of smooth transition and avoidance of abrupt contrast.†

As regards Monreale, Mr. LaFarge's own words in the "Scribner" article may be quoted. "The richness of decoration is so striking that we are quite likely to lose sight of one of its most remarkable qualities, the singular majesty

of effect, due in no small measure, it is true, to the arrangement and scale of its mosaics, but even more to the bold subtlety with which the succeeding arches rise one after another, to the springing of the half dome of the sanctuary in which is the colossal mosaic bust of Christ."

In spite of the large amounts of the variations in the unbuilt part of St. John the Divine just quoted by Mr. LaFarge, it may be confidently said that the eye will note the effect without noticing the means by which it is produced.

Lest visitors to the church should anticipate the possibility of easily detecting the variations in the completed choir, it may be said that the pavement of Santa Maria Ara Coeli on the Capitol Hill at Rome, a church which is well known to every tourist, has a rising slope of 2.90 feet between entrance and choir rail, which will probably never have been noticed by anyone who reads this paper. It is doubtful that many who read this paper will have noticed a rising slope at Chartres of three feet seven inches between entrance and choir rail. The reason for these oversights is that every flat surface below the eye slopes upward in perspective, and that the eye confounds the artificial effect with the one which is universal and natural. Instances in Italy might be multiplied indefinitely, but it is sufficient to say that the Brooklyn Museum research has records for levels of pavements with a rising slope toward the choir in eighty-five Italian churches, and observations for a much larger number, although no history of architecture has ever mentioned a single instance of this constantly recurring arrangement in mediæval churches.

The slope in St. John the Divine will, therefore, certainly not attract attention, although the levelling of the floor of the choir stalls resting on the slope makes it more apparent than it would be otherwise.

As to noticing a convergence in plan of 19 inches in the alignment of the piers, it may be mentioned that a convergence of seventeen feet in the walls of S. Giorgio in Velabro at Rome, or of twenty-three feet in S. Stefano at Venice, is absolutely inconspicuous.* In fact, Mr. Street's "Brick and Marble in the Middle Ages" quotes a uniform width for the nave of S. Stefano of "about 48 feet," without noticing that the nave narrows in plan to correspond with the walls. This measure must have been taken at the second bay of the nave, on the presumption which is usual in modern surveys, that one measure is sufficient.

As to the varying heights of the capitals in St. John the Divine, Mr. Heins is himself authority for the point that this variation is wholly inconspicuous.

In one passage of the quoted letter he says: "I am constantly surprised to find that it is almost impossible to see that there is any variation in level of the caps from the choir floor; it is readily observable from the gallery level." On this head it may be added that variations which aggregate a maximum of three feet in the height of arches in Fiesole Cathedral are almost universally overlooked. To say nothing of foreigners, hundreds of Italian antiquarians are wholly ignorant of the existence of these and similar discrepancies, such as the drop of five feet in the eastern crossing arch of Siena Cathedral. (During a recent visit to Florence a friend who was with me in S. Maria Novella, and who knew from my publications that this church has variations in pier spacings aggregating a maximum of thirteen feet, undertook to point out the widest arch. He selected the wrong one, but I could not be certain of his error until I had applied the tape.)

Thus it appears that the architects of the most imposing church in America have taken the trouble to give variations to the dimensions which they cannot themselves detect from the floor of the church.

In his conversations with me Mr. Heins always insisted on the point that his firm would have gone much farther in the use of refinements in this cathedral, if the conditions of modern practice, the novelty of the idea, and the traditional habits of modern masons had made it possible or convenient to do so. That he was fearful of arousing prejudice by premature announcement of his plans before they had been executed may be stated, and that he was led to proceed cautiously by the consciousness that such a prejudice existed is also positive.

From the standpoint of a church like St. Ouen, at Rouen, whose entire plan is swung on "Hogarth's line of beauty" the number of variations in the Episcopal Cathedral

* There is an error of proof in the Sturgis *Dictionary* relating to the convergence in S. Giorgio in Velabro, where the amount is stated to be one foot. This error is certainly due to a confusion resulting from Mr. Sturgis' work of condensation, as the matter was obtained from my publication.

* Italics by W. H. G.

† The measurements for S. Paolo Ripa d'Arno have never been previously published.

may appear to be inconsiderable and unimportant. That they are tentative and experimental has been avowed by the designers. The great fact that they exist because they were considered desirable by the designers is still there, and this fact assumes enormous importance when we consider that no modern church (except the one at Methuen, Mass., by the same firm) had previously been designed with an asymmetric plan.

Of equal importance is the point that Mr. Heins has publicly opposed, in a standard "Dictionary of Architecture," the generally current modern view that the mediæval architects were incapable of refinements and that all their variations from geometrical design were the result of incapacity or indifference. That Mr. Sturgis agreed with the opinions of Mr. Heins and selected him to write this article as one of special importance, and in view of these opinions, is also known to me.

If Mr. Heins had not written the article in the Sturgis "Dictionary," or if his firm had not built the New York Cathedral choir, either one of these facts might appear less significant, but the facts, when taken together, are certainly much more important than either one would be if considered alone. For it now devolves on the sceptic as to mediæval refinements not only to ignore the existence of a great modern church which has revived the practice, but also to controvert and answer the reasoning and the statements which are contained in the Sturgis "Dictionary."

(To be continued.)

ILLUSTRATIONS.

THE ROYAL SHRINE AT WESTMINSTER AS IT MAY HAVE BEEN IN THE FOURTEENTH CENTURY.

"The shrine of the most illustrious King Edward the Confessor was placed on high like a candle upon a candlestick, so that all who enter into the House of the Lord may behold its light."

THIS quotation in Mr. Lethaby's book on the Abbey suggests the arrangement of the High Altar before the fifteenth century screen was erected. In the drawing, the chantry of Henry V., which was erected in the same century, is also omitted, and the thirteenth century Lady chapel is indicated beyond.

The coffin of St. Edward was of gold and precious stones, and rested upon the existing high basement, which is inlaid with coloured marbles and gold mosaic. This is encircled by the tombs of kings and queens, while around and above is the wonderful building of King Henry III., which may have been equalled, but has never been excelled.

The design of the cover suspended over the shrine is based on that over the shrine of St. Cuthbert, given in the "Rites of Durham."

The size of the High Altar is fixed by the thirteenth century retable, now preserved in the Jerusalem Chamber, which is here shown in what was, no doubt, its original position.

The design of the frontal is conjectural, being the arms of the Confessor, divided by four figures under gold canopies.

The well known drawing of the sanctuary on the Islip Roll, 1532, shows a rood beam with figures, the tester and the hanging pyx over the altar; but mention is made in the Records of Henry III.'s moving the rood, so there was possibly an earlier one than this, of rather different design.

The same King "arranged for two candles to be lighted on feast-days, together with the three other candles hanging before the high altar; of these the centre one had always burned perpetually; and he gave four silver basons to set them in (the centre one presumably being already provided for)." (*Customary*, p. 45.)

All the tombs are shown with testers, decorated in colour and gold, which they originally had.

The windows are shown with grisaille glass and medallions of bright colour. The clerestory windows no doubt had one or more tiers of figures all round.

The wonderful mosaic pavement in front of the High Altar exists now, almost as laid down by Abbot Ware in 1268.

The lettering (the collect and part of the epistle for All Saints' Day) is based on the illuminated Missal of Abbot Litlington. The figure in the capital at the top represents St. Faith, from the early painting in the chapel. In the capital O at the bottom is a rough outline sketch from the fifteenth century picture in the National Gallery—the Exhumation of St. Hubert—which shows an altar with low retable, ridel posts, &c., similar to the High Altar suggested above.

COMPETITION DESIGN FOR OVENTREY MUNICIPA BUILDINGS.

THIS scheme, by Messrs. Nicol & Nicol, is a regular and axial plan on a most irregular site. The acute and obtuse angles at the termination of the principal façade have been treated with entrances and carried up to roof turrets, which would effectually deal with the difficulty of the intersection of the horizontal mouldings on such angles. In the centre of the main façade there is a similar feature but on a larger scale and of such a character as to dominate the whole design. The irregular curved building line to this front has been taken advantage of by bringing the centre of the façade forward, and as this part has also additional ornamental features, it emphasises the centre of the building and the more important rooms which are placed there. The style of the design is Gothic, so that the buildings will harmonise with those adjoining, but at the same time it was felt that the purpose and dignity of the building demanded something more than an irregular and picturesque group, and in consequence the main lines of the scheme are classical in their composition and even the details have been made more suitable to the requirements of such a building than the pure Gothic details would have allowed.

The accommodation asked for has been provided on three floors, with a lower ground floor at the lowest part of the site.

The Council Chamber, committee rooms, Mayor's Parlour, and ante-rooms are all *en suite* and placed in centre portion of the first floor, with a spacious staircase and a lift for use in connection with them. The chamber is placed in the rear, but the committee rooms are placed in front, where they can be used together for receptions and such functions.

The Town Clerk's department adjoins the Council suite, and on the other side are placed the education offices adjoining their special committee room.

The ground floor is occupied with the large departments to which the public require easy access, such as the gas and electrical departments, and the rates office.

The surveyor and medical officer are placed on the second floor, where fine drawing offices are provided with the proper lighting. The corridors are in all cases well lighted direct from the open and not through the rooms; the lavatory accommodation is provided in two isolated blocks on each floor.

The Town Hall is planned on the site suggested, and provides for the accommodation asked for in a well-lit and lofty hall having connection with the municipal buildings on both floor and gallery level; the crush halls, stairs, and cloak-rooms are placed next the road.

Messrs. Nicol & Nicol's plan is one of those that adopts the principle of well-lighted rooms on both sides of a corridor, which, as we urged in our critique of the drawings is, in our opinion, far preferable to the type of those premiated when, as at Coventry, the site is restricted.

AN oak chancel screen designed by Mr. F. Thorman is to be erected in All Saints Church, Bramham. The memorial screen is expected to cost 650l.

MR. HARRY W. TAYLOR, A.M.Inst.C.E., Newcastle-on-Tyne, has been appointed to act as assessor in the fourteen competitive schemes submitted for purifying and collecting the sewage of Corbridge.

HACKNEY Borough Council has accepted the offer of 3,000l. from Mr. Carnegie for the erection of an additional public library in the north-west part of the borough, subject to Mr. Carnegie agreeing to allow the division of the balance of his gifts, namely, 15,850l. among three branch libraries, and to his amending his condition as to the amount of the penny rate.

A MEMORIAL to Sir Thomas Drew was unveiled last week in Christ Church Cathedral, Dublin. It was executed by Messrs. Sharpe & Emery, under the supervision of Mr. Harold E. Coyle architect. It is in the form of two Latin brass plates surmounted by carvings in Cong stone. The carving over the memorial represents his knight's helm, with the Drew arms, hereditary, displayed with the acanthus leaf. The brass plate beneath has a chevron bordering. The inscription reads as follows: "To the glory of God, and in memory of Sir Thomas Drew, LL.D., T.C.D. (Honoris Causa), President of the Royal Hibernian Academy 1900-1910; President of the Royal Institute of Architects of Ireland, 1889-1901; Fellow of the Royal Institute of British Architects; honorary member of the Royal Scottish Academy; honorary architect of this Cathedral, 1880-1910; only son of the late Rev. Thomas Drew, D.D., Rector of Loughinisland, Co. Down; born 18th September, 1838; died 13th March, 1910. 'Blessed are the dead which die in the Lord.' Erected by his widow."

THE SOCIETY OF ARCHITECTS.

MEETING of the Society of Architects was held at Bedford Square on Thursday, May 11, Mr. G. E. Bond, president, in the chair. After some preliminary business Mr. A. Saxon Snell, F.R.I.B.A., read the following paper "Hospitals":—

When you did me the honour of inviting me to read a paper before the Society you naturally and kindly suggested a subject with which I have been more or less closely acquainted throughout my professional life.

I cannot guess whether you hope or expect to hear something new on this old subject, but I may at least trust that I will not feel disappointed if I confine myself to hospitals. They are rather than to what they might be, and may be one day. The ideal hospital of the future would no doubt be an fascinating subject, but it is of too wide and impractical a nature to be dealt with in an evening's discussion.

The building of hospitals is one of the most ancient and interesting instances of the progress of mankind in the direction of altruistic effort. It was, and is, a practical expression of man's sense of his responsibility to his fellow creatures; and as such it ought to command our wide and ready sympathy.

It is not, however, my purpose to-night to deal with history, or to refer other than quite casually to ancient examples which have for us a sentimental interest only, though they do also mark the progress we have made. We learn little from them except what to avoid.

Modern hospital planning in this country dates from 1858, when the Blackburn and (a little later) the Herbert Hospitals were built. Then for the first time the pavilion system was adopted. Previously the wards generally consisted of a number of rooms containing a limited number of beds, usually ranged on each side of an enclosed corridor. Though but one external wall, this necessarily entailed absence of through ventilation, a matter which we shall see is of great importance.

The administrative offices and sanitary conveniences were in more or less direct communication with the wards; and the materials and methods of construction did not differ essentially from that of ordinary buildings for the healthy.

These are the main points which mark the difference between old and new hospitals, and to appreciate the importance of the change in these matters, we must look at the fundamental principles which actuate them.

Now, as a first point, I will remind you that a hospital should be, designed first and last for the housing and care of the sick, diseased, and injured; an elementary proposition too often overlooked, or not always realised in the building. We may start out with that ideal before us, but sooner or later other considerations obtrude themselves to its front. To see clearly how this proposition is to be realised, let us examine in detail the thing to be done and the conditions under which it can be done.

Sickness may be defined as the temporary disorganisation of our internal machinery. Disease we will call the invasion of our system by destructive or paralysing forces. Injuries are violent breakage, laceration, or disruption of the bodily structure.

Shortly put, all disease, sickness, &c., is disorganisation or temporary disarrangement of our bodily machinery. Cure is restoration or reorganisation.

Our bodies are so wonderfully designed that, given fresh food, heat, and water, they can effect their own repairs with but small outside help, the amount of which varies, of course, according to the extent of the disorganisation or injury. Outside help comprises mainly careful and skilled nursing and medical or surgical skill.

If all these were, so to speak, on hand at all times for as required, hospital planning and administration might be simple and stereotyped; but as we can only obtain them in varying proportions, we have to adapt our systems and buildings to meet the circumstances.

I feel that some apology is due to you for thus stating these elementary propositions. The truth is that, though I may have been engaged, as I have, for thirty or more years upon hospitals and buildings akin to and connected with hospitals, one is driven again and again to recall them as progress is to be achieved. If we are inclined to find satisfaction in the enormous progress achieved in hospital design, it is salutary to turn over the pages of Miss Nightingale's "Treatise upon Hospitals," published as long ago as 1863, and the works of De Chaumont and Galton. We shall quickly realise that we have not even yet put into practice

all the lessons they taught us from their long and close acquaintance with the realities of sickness and disease.

No doubt it is true that every one of us endeavours, and in part succeeds, in making each building we design an improvement upon its predecessor; but these improvements are too often in matters of detail only, and our satisfaction and absorption in them is liable to lead to forgetfulness of larger problems as yet unsolved.

Do we not indeed see this tendency even in the purely architectural design? The columns and cornice of a Greek temple were but idealised construction, and the form of each part had some definite relation to the practical work it had to do. Who, contemplating the latest creations of neo-Greek, can trace any connection between the details of the most pleasing and refined elevations and the original purpose of cornice, column, and beam? The beauty and refinement may be there, but they are merely applied ornament without relation to realities.

In the same manner it is possible to improve and refine details of hospital design whilst losing sight of their practical purpose.

The really perfect hospital will be realised only when we can free ourselves from conventional ideas and try to get a true sense of the end to be achieved, and keep that end steadily in view. No one of us can hope to make a revolution, but each one of us can do something towards it if we have will and initiative.

One might multiply these abstract ideas indefinitely, but I think it will be more interesting to you if I descend to more practical matters. I propose, therefore, to give a general description of the buildings which go to form a modern hospital, and to deal in detail with the most important part, *i.e.*, the ward unit.

For this purpose I show a block plan which will serve as a general illustration.

Dealing first with the question of site.

The ideal site has often been described at length, but may be shortly defined as being in the open country, but within convenient distance by rail or road of the town or area from which the patients will mostly be drawn. A light soil overlying gravel or permeable chalk sloping gently towards the S.E., and protected by hills or rising ground or trees from the N., N.E., and N.W.

A good water supply should also be available, and facilities for disposal of sewage.

For special hospitals which depend upon the services of the highest medical and surgical skill, much has to be sacrificed to bring them within reasonable distance of the specialist's consulting room.

The disposition of the buildings depends, of course, largely upon the shape and area of the site, and the only general rules we can make is that the ward blocks should be so placed as to be free from the traffic of the other buildings and the noise and dust of a public highway, should not be shadowed by other buildings, and should have uninterrupted light and air.

This plan does not by any means pretend to be ideal, or it is only so to the extent circumscribed by English limitations.

In this country we do not appear to be able to allow ourselves the luxury of spaciousness and magnificence which are quite common features of Continental public buildings. It has always been so, as witness the size and restraint of our cathedrals and castles as compared with those, say, in France. Our genius is confined to our country houses, than which nothing more perfect, or indeed approaching them, is to be found anywhere in the world.

In the case of hospitals you have only to study the several block plans which I show. Note how the Germans space their ward blocks, and that they are one, or at most two, storeys in height only. Also the plan of Dresden Hospital, with ward blocks one storey in height and lifted high above the ground.

One reason is, no doubt, that in England so many of our buildings, and particularly hospitals, have been built and endowed by individuals, instead of, as abroad, by the State; and States, of course, have large resources to draw upon.

Turning to the block plan, you will note that the public or road approach is on the N. side, from which easy access is obtained to the administrative offices, leaving the ward blocks freely exposed to the S., S.E., and S.W.

Lodge.

Commencing at the entrance gates, we have a small lodge placed midway between two pairs of carriage gates. One of

these entrances should be reserved for goods traffic, and should have a full-sized weighing-machine on the inner side of the gates. It is always to be desired that carts bringing in coals, provisions, &c., should be weighed on entering and leaving, for the purpose of checking.

The lodge should be occupied night and day, and be in telephonic communication with the rest of the hospital.

Out-Patients' Department.

To the left of the lodge I place the out-patients' department, which should have separate entrances and exits into the road, and it should also be entirely disconnected from the other buildings. This is a point which is not always observed; indeed, cannot be with some sites, especially in city hospitals.

Bearing in mind that dirt and disease are largely cause and effect, no patient is admitted to the wards of a hospital until he or she have been bathed and re-clothed in perfectly clean garments. This cannot be insisted upon in the case of out-patients, and it is obvious that dirt and disease germs to a considerable extent must be deposited in that particular department; and it is therefore best isolated.

The out-patients' department is too large to describe in detail. It comprises a number of consulting-rooms, each devoted to certain classes of disease and surgery ranged round a large waiting-hall.

The main point to be observed in the plan is that the hall should be sufficiently large, along a long parallelogram, to allow of easy classification of the patients. In large institutions it is customary to have smaller waiting or preparation rooms intervening between the hall and each consulting-room, where patients can undress if necessary and otherwise be prepared for examination by the surgeon or physician.

It is also important to provide separate exit doors for the consulting-room, and if it can be so arranged, patients should not return to the main hall, but go directly into the waiting-hall adjoining the dispensary. This is very difficult to manage unless the consulting-room is lighted from the roof. It is so arranged at Charing Cross Hospital.

Casualty Department.

Adjoining, and indeed forming part of the out-patients' department, is the casualty department, which, for identical reasons, should also be disconnected from the main building.

For this department it is essential to have easy and quick access from the public road, and it should be possible to bring a cab or vehicle almost to the door of the operating room, because fatal damage may be done to the injured person in removal. At Charing Cross Hospital you will see that the doors actually open on to the court yard.

Attached to the operating room would be a waiting hall for patients' friends, and a room or small ward for the injured after treatment.

Observation Wards.

Beyond this block is a smaller one for the observation of cases suspected of infectious disease, or such as may develop in the hospital itself. This building should have no closed communication at all with other buildings. A small though important rule, but rarely adopted.

Isolation Wards.

In all hospitals a few rooms or a small isolated building is provided for fever cases which may arise among patients admitted to the hospital for other diseases. It is of course better that such cases should be at once removed to an infectious hospital, but it is not always practicable. The planning and fitting of this building falls under the head of fever hospitals, which is a subject for a separate paper.

I need only say here, that if one, however small, is attached to a general hospital, it should be absolutely isolated with a zone at least 40 feet wide all round. It should be complete with kitchen and nurses' quarters.

I show the plan and section of such a building planned on the lines of the Pasteur Hospital at Paris, which may interest you, and for a description I may refer you to the short paper I read last year before the Royal Sanitary Institute.

Medical School.

On the right of the lodge is placed the medical school, lecture room, &c., and beyond these the pathological department, museum, mortuary, and engineering plant house, &c.

The medical school should contain besides a large lecture theatre, smaller lecture rooms, museum, library, students' studies. The students' recreation and reading room may be conveniently placed in the same building, though it is not altogether to be commended. They would be better placed in

connection with the living quarters or hostel if one is provided.

Mortuary.

Even in public mortuaries this is recognised, and you will find for instance that in Marylebone bodies are placed in a building which is more or less a small chapel.

For a hospital, it may be quite a small place if there is adjoining a large room or preferably a mortuary chapel. You may call it, or use it as, a "viewing room."

In practice, bodies are placed in the mortuary proper, which is severely and coldly practical in its construction and finishings with its washable walls and floors, and ample ventilation.

When friends or relatives come to see their dead, the body is brought into the viewing-room or chapel, to spare them the gruesomeness of the mortuary.

It has always seemed to me there should be a separate entrance from the mortuary yard to the public road, as a hearse and funeral procession is not a cheerful sight for either patients or staff.

Attached to the mortuary, or in close proximity, is a post-mortem room and pathological laboratory. Both rooms must be severely plain with washable and impervious walls and floors. The danger of blood-poisoning awaits the careless operator in these rooms. Pathological theatres are seldom used now. Instruction in pathology is given in lecture rooms, and practical demonstrations are held in small classes.

A hospital mortuary should be something more than a sort of cold-storage room.

How wonderful is Death,
Death and its brother Sleep

... so passing strange and wonderful,

sang Shelley; and even the meanest of us will always be awed in its presence; always by instinct pay respect to the cold clay, save only those whom constant familiarity has rendered callous. It has always appeared to me a beautiful idea to make the mortuary a consecrated place.

Operating Room.

Every hospital must have an operating room; and its area and arrangement differ according to whether the hospital has or has not a medical school attached to it. In the former case all that is required is a fairly large room, preferably square on plan, say from 200 to 250 feet in area. Its adjuncts comprise a small sink room, anæsthetic room, and sometimes what is clumsily called an after-recovery room, which is merely a small ward in which to place a patient immediately after an operation.

Separate operating theatres are often provided, one for each surgical ward, partly to avoid carrying patients long distances and partly because distinguished surgeons differ much in their ideas as to fittings, arrangements, &c.

Otherwise, a more reasonable and economical plan is to place them all in one building with their adjuncts in communication. A very good arrangement may be seen at the London Hospital.

Administrative Block.

Coming now to the main range of buildings, we have in the centre an administrative block which should contain the offices, kitchen stores, &c., and beyond it to the south or even on the upper floors, the nurses' home may be placed.

I say this with some reserve, as for many reasons the nurses' home is better separated entirely from the hospital proper; and, indeed, it is a more ideal arrangement to place this block in its own separate grounds and out of sight of the hospital. No one who has not undergone the hard life of a nurse, surrounded on all sides by pain and suffering many more hours than the British workman thinks desirable for his own work, can realise the relief of different surroundings and atmosphere.

The administrative block contains all the rooms, offices, &c., used in the general administration of the hospital, commencing with the secretary's department, committee room, medical officers' consulting rooms, waiting room for visitors, general kitchen, stores, matron's office, &c. Obviously it is best placed in the centre of the establishment, and its planning is governed by an appreciation of the various uses of its several parts. It need only be said that the secretarial and office part should be well separated from the kitchen and stores department. It is general to make the main corridor the division between them.

Kitchen and Stores.

One large kitchen really suffices for a hospital. It is quite unnecessary to provide a separate one for the staff.

In many hospitals a separate kitchen is provided for a

aced in the nurses' home; but it is a more economical plan have one kitchen only, and if the nurses' home is at a distance from the hospital, the nurses' dining room may be aced in the main administrative block close to the kitchen.

Except in the neighbourhood of large towns or cities, it well to have plenty of storage room, as it is cheaper to buy ods in large quantities. In large centres, however, weekly, even daily, deliveries are easily arranged for.

Nowadays we use little or no coal in the kitchen for oking, which is done almost entirely with gas and steam.

I need scarcely add that both kitchen and scullery should be well lighted and ventilated, and preferably by lantern ghts. Also that the walls should be lined at least six feet gh with glazed bricks or tiles.

Floors are best covered with hard vitrified tiles with close joints. It is also well to bear in mind that rounded corners nd skirtings are as necessary in these rooms as in the wards.

Boiler House.

In any institution larger than a cottage hospital steam is essential for all kinds of purposes from heating to sterilising; and a large and well-equipped boiler-house is desirable.

It is a great mistake for architects to overlook this important matter and to imagine that any small and out-of-the-way corner is good enough for the boilers and engineering plant. The department is best placed in a detached building, and so arranged that there shall be ample room not only for the necessary boilers and plant, but also that these can be renewed or replaced at any time without the necessity of pulling down buildings or walls.

Plenty of boiler-power is really economical. It is cheaper in the end to work a large boiler at low pressure than a small one at high pressure.

Steam may be required not only for heating and cooking, but also for laundry purposes and electric lighting, and many small matters.

(To be concluded.)

ARBITRATIONS.

(Concluded from last week.)

OUR last question to consider to-day is how to appeal to the law if we so desire.

Having selected your own Judge for your case he becomes the final Judge of all questions of law and fact submitted to him, and there is no appeal from his decision; that surely is alone sufficient reason for the parties seeing that they have a competent person to decide their cause. As to the procedure which takes place prior to the hearing and at the hearing I have expressed my views fairly fully in the lecture I gave on arbitration procedure in November last, and of which you have all had a copy.

Nevertheless by proper methods either party can always secure that any question of law should be submitted to the Court for the Court's opinion, and any arbitrator can always obtain guidance from the Court on any points he may be doubtful about.

This is not done by way of appeal in the ordinary acceptance of the word "appeal." An appeal is a proceeding taken after a decision is given contending that such a proceeding has been decided wrongly, whereas the method of procedure in getting a case stated must be prior to the arbitrator giving a final decision.

There are two methods, either

(1) The arbitrator can state his award in the form of a special case, which means that he will ascertain the facts, draw his own conclusions, then leave the questions the Court has to decide, stating what his decision would be according to the way the Court shall answer his question or questions; or

(2) The arbitrator may himself or either party may call upon him during the pendency of the arbitration to state a case under Section 19 of the Act for the decision of some question of law, and if he does not so state the question an application to the Court can be made and an order obtained for him to state a case.

A case stated under the first power, Section 7, will go to the High Court in the first instance, either to the Divisional Court or a Judge of the High Court, can then be taken to the Court of Appeal and afterwards to the House of Lords, whereas a case stated under the second power, Section 19, goes to the High Court, and then that decision is final.

We may well consider for a moment how to set these proceedings in motion and which is the better.

The arbitrator may adopt either method without consulting the parties.

The parties may request the arbitrator to so state a case, and if he refused it would be misconduct and his award would be bad.

Either party can request the arbitrator to adopt one or other of the before-mentioned courses of bringing the question or questions before the Court, but if the party does not so request him, and the question of law on which the opinion of the Court is desired is material to the issues between the parties, and is under all the circumstances one which, the Court considers, should be settled by the Court, the order will be made and an arbitrator must adjourn the hearing of the arbitration pending such an application.

The Arbitration Act, 1889, introduced new principles and invested the Court with powers and control over arbitrators which it did not previously possess. If an arbitrator were able, by declining to express an opinion upon a point of law and hurriedly making his award, to prevent an order being made upon him to state a case the intention of the legislation would be defeated, and Section 19 would be nugatory and of no effect.

That Act confers on the parties to an arbitration "the right to apply to the Court for an order directing the arbitrator to state in the form of a special case for the opinion of the Court any question of law arising in the course of the reference. The right thus conferred must not be restricted by the arbitrator, and if a party to an arbitration, acting bona-fide, requests an arbitrator either to state a special case raising a question of law arising in the course of a reference and material for consideration to delay his award until the party can apply to the Court for an order directing a special case and the arbitrator refuses to comply with either of such requests the arbitrator is prima facie at all events guilty of a breach of duty towards such party.

"Such a breach of duty is prima facie misconduct on the part of the arbitrator within the meaning of Section 11 of the statute, and justifies the Court in setting aside the award under that section or in remitting it for further consideration under Section 10. Even in such a case as that supposed there may possibly be some grounds for justifying the refusal of the arbitrator, although it is not easy to imagine any. But it is obvious that, if an application for a special case or for an adjournment is frivolous and is made merely for delay an arbitrator will be perfectly right to refuse it and will be upheld by the Court in so doing."

Well—which is the better method? If I am acting for a party who wants to put off the evil day and several questions are likely to crop up it is a question whether it is not better to ask for a case to be stated under Section 19 each time a question crops up, and thus continually obtaining adjournments.

On the other hand, if I am going to win I feel that I should like the question settled once and for all, and not be taken to the High Court, Court of Appeal, and then the House of Lords.

I have known both plans to be adopted, and both have taken an immense time and cost an immense sum in costs. It is a matter one cannot well advise upon unless you have a concrete case, and know what is in dispute and who are the litigants.

We must not forget that after an award has been published by an arbitrator applications can be made in proper cases for the award to be set aside or remitted to the arbitrators for various grounds, some of which I have enumerated in the lecture on arbitration procedure. An instance of this which recently came under my own experience I will tell you prior to finishing the question of appeals to the Courts.

It was a case of medical men who had been in practice and were dissolving, and they each appointed arbitrators who did not appoint an umpire, but entered upon the reference. The matter was conducted without legal advisers, and one of the partners suggested that the debts of the old firm should be collected by the accountants who had previously collected them, but the other partner objected. However the arbitrators thought it quite a reasonable suggestion, and in their award they directed that Messrs. A. & B., accountants, should collect the debts of the firm. The objectioning doctor refused to take any notice of the award, so the successful one instructed his solicitor to have the award enforced by the Court. He duly made the necessary application, and the Court made the order enforcing the award and ordering the unsuccessful party to pay the costs. Thereupon the unsuccessful party took advice, and the award was shown to me. Well, the award was bad. The arbitrators had no power to appoint the firm of accountants to collect the debts, so I advised that proceedings should be commenced in Chancery to set the award aside. This

was done, and it was set aside, with costs against the other side; and to-day one party has an order of the King's Bench Division enforcing an award, which award has been set aside by the Chancery Division on the ground that the award was bad. They want very careful drawing.

I am not addressing these words to you in order to suggest that you should do the lawyer's work. The profession of the law cannot but benefit when men act as their own lawyers; it has been from all time one of the most fertile sources of litigation and necessarily must be. Law and practice depend to a large extent on something going wrong, and nothing can go much more wrong than when a man dabbles with what he does not understand. A skein of thread is easily wound off by one who is accustomed to the work, but let a clumsy hand attempt the task, and who can unwind it after him? If I have been able to suggest some thoughts as to a certain line of action to you, who in your professional career must necessarily be concerned in advising and taking part in arbitrations in one capacity or another, I am content.

Finally, an arbitrator is a power. Under the Common Law the Court had no jurisdiction to remove an umpire or arbitrator; now, however, where an umpire or arbitrator misconducts himself the Court, under Section 51 of the Arbitration Act, can remove him; such applications are rarely made, because the misconduct of the arbitrator or umpire does not often appear until the award has been made.

I feel that you will have heard quite enough about arbitrations to-day, and that I must not further detain you. It has given me very great pleasure to come here and place at your disposal my views on this particular subject roughly, and, I hope, in not too legal language, so as to make myself intelligible. If there is any question upon which I have not made myself clear, and you would like me to give an explanation, I will do so with the very greatest pleasure.

THE CONCRETE INSTITUTE.

THE Second Annual General Meeting of the Concrete Institute was held on Thursday evening, May 11, in the Lecture Hall of the Institute at Denison House, Westminster, Sir Henry Tanner, Kt., I.S.O., F.R.I.B.A., in the chair. The following were elected members of the Institute:—

William John H. Allen, Gravesend; Thomas Henry Bull, P.A.S.I., Architect's Department, London County Council; Thomas T. B. Cliff, A.M.I.Mech.E., Valparaiso, Chili; George Hatton, M. Iron and Steel Inst., Brierley Hill; Alfred T. MacDermott, Assoc.M.Inst.C.E., P.W.D., Federated Malay States; John Brittain Walker, A.M.I.Mech.E., Buenos Aires.

It was announced that the following students had been admitted by the Council:—

Thomas Percival Geen, Stud.Inst.C.E., Cardiff; John R. Gwyther, B.A., B.E., Stud.Inst.Mun.E., Manchester.

The appended annual report and statement of accounts were adopted. The result of the annual election of members of Council was announced, and Messrs. G. C. Workman, W. T. Hatch, Charles F. Marsh, D. B. Butler, E. P. Wells, C. S. Meik, J. Ernest Franck, Henry Tanner, W. G. Perkins, Bertram Blount, and J. Gibson Fleming were elected.

The Concrete Institute had on December 31, 1910, 901 members and 14 Special Subscribers; the membership has increased, therefore, by 51 during the past year, and is still increasing. The finances of the Institute are in a satisfactory condition and show a balance in hand.

The general meetings and the visits that have taken place during the past year have been recorded in the "Transactions."

The Council has in the past year been concerned with various technical and administrative matters.

The Council has had under consideration a draft of suggested regulations to be made under the provisions of Section 23 of the London County Council (General Powers) Act, 1909, with respect to the construction of buildings wholly or partly of reinforced concrete. These regulations were submitted by the Superintending Architect of the London County Council to the Institute for its consideration in accordance with the provisions of the 1909 Act referred to, whereby it is enacted that the Concrete Institute together with the Institution of Civil Engineers, the Royal Institute of British Architects, and the Surveyors' Institution, are to have notice of the Council's intention to apply to the Local Government Board for allowance of any regulations as to the use of reinforced concrete in the County of London. In connection with this the Royal Institute of British Architects convened a meeting of representatives of various technical

societies interested in the matter, and Mr. Charles F. Marsh, M.Inst.C.E., and Mr. T. B. Shore were appointed as delegates of the Concrete Institute. This Conference of Societies held a number of meetings, and recommendations were arrived at which were transmitted by the Royal Institute of British Architects to the London County Council. The Science and the Reinforced Concrete Practice Standing Committees of the Concrete Institute held six joint meetings at which were drawn up a number of recommendations for amendment of the draft regulations. These suggested amendments were put forward by the Institute's delegates at the Conference of Societies. The Council transmitted to the Superintending Architect the proposed amendments arrived at by the joint committee of the Concrete Institute, and informed him that the Institute was in substantial agreement with the recommendations of the Conference of Societies, but would be glad if the London County Council would also consider the further suggestions contained in their joint committee's amendments. The matter is at present confidential, as the draft regulations submitted were merely in preliminary stage; the Council is therefore unable to furnish detailed particulars of the recommendations made to the London County Council.

The Engineering Standards Committee asked the Concrete Institute to appoint a representative on their Sectional Committee on Portland Cement, and the Council in May appointed Mr. Herbert W. Anderson, Assoc.M.Inst.C.E., to act in that capacity.

The Engineering Standards Committee at a later date asked the Institute to appoint a representative on their Sectional Committee on Bridges and Building Construction, which deals with the standard specification for steel, and Mr. William G. Kirkaldy, Assoc.M.Inst.C.E., was appointed by the Council.

The Royal Institute of British Architects asked the Concrete Institute to appoint two representatives on the Joint Committee on Reinforced Concrete, and the Council appointed Mr. William G. Kirkaldy, Assoc.M.Inst.C.E., and Mr. Charles F. Marsh, M.Inst.C.E., to act in that capacity.

At the end of March 1910 the offices of the Institute were moved from 1 Waterloo Place to 8 Waterloo Place, and on March 25, 1911, the Institute's offices were moved to Denison House, 296 Vauxhall Bridge Road, Westminster, near Victoria Station. The former offices were only looked upon as temporary, and the Institute now has the great advantage that a hall suitable for its meetings is situated in the same building. The offices, too, are larger and more convenient and in the sole occupancy of the Institute. A library is now in process of formation and periodicals are being obtained so that members will be able to use one of the rooms as a library, to which members are invited to contribute.

Professor Adams was appointed to the Executive to fill the vacancy created by the retirement of Mr. A. E. Collins, the former Honorary Secretary, and subsequently Mr. Serrallier and Mr. J. S. E. de Vesian were appointed additional members of the Executive.

Last year the Council had the question of the revision of the rules under consideration, and a sub-committee was appointed, which reported in due course, and last October the new rules were passed at extraordinary general meeting of the Institute, and are now in force.

The general effect of the new rules was to do away with the Executive and to abolish the offices of Honorary Secretary, Honorary Treasurer, and Chairman of the Executive, thus enabling the management of the Institute to revert directly to the Council, the conduct of the general business being done under their supervision by a permanent Secretary. The appointment was advertised, and 217 applications received; a selected number of applicants were interviewed and eventually Mr. H. Kempton Dyson was appointed Secretary in May 1910.

The amended rules also provided for the creation of a Students' Section, which it was felt would be an advantage to the Institute in respect to future members and would be in conformity with the professed object of the Institute, which regards the education of the public in matters concerning concrete generally. This Students' Section has been started and eleven students already enrolled.

The Earl of Plymouth having retired from the office of President, Sir Henry Tanner was appointed to that position, and Mr. Alexander Ross was appointed a Vice-President to fill the vacancy created by Sir Henry Tanner's acceptance of the Presidency. The Council also appointed Mr. Edwin O. Sachs, the former Chairman of the Executive, as a fifth Vice-President. The Council desire to record their appreciation of the great services rendered by Mr. Edwin O. Sachs in the formation of the Institute.

The rules of the Institute provide that four members of the Council shall retire every year. This year three additional vacancies were created by an ordinary member of Council having been made a Vice-President and by the resignation of two other members of Council. The rules so provide that in 1910 the number of members of Council shall be increased from 22 to 26. Thus in all there were vacancies, which have been filled by ballot.

It was decided by the Council that in future elections, after the current one in 1911, the most practical principle for filling the seats of President and Vice-Presidents would be for the President to be appointed from among the Vice-presidents, and the Vice-Presidents in turn to be appointed from the ordinary members of Council, and it was also decided that if any President or Vice-President should not attend meetings of the Council for two years previous to their time for retirement they would not be re-elected.

When the new rules came into force the Finance Committee was appointed, consisting of Mr. E. P. Wells, the former Honorary Treasurer, as Chairman, and Mr. W. T. Hatch, Mr. Alexander Ross, Mr. Edwin O. Sachs, Mr. L. Fraillier, and Sir Henry Tanner as members.

The Council has decided to hold a two days' summer meeting in June next, and in connection therewith to hold the first annual dinner on the evening of one of the days.

It has also been decided to give a course of six educational lectures on the subject of reinforced concrete in the Meeting Hall of Denison House, and if these are successful it is proposed to continue them in subsequent years, dealing in turn with various aspects of concrete and its constituent materials.

A medal will be granted for the best paper read at general meetings in each session, it being thought that this should encourage the contribution of data that would prove of service to members, particularly when recorded in the "Transactions."

Certificates of membership will be issued and their form is now under consideration; designs are being obtained for a seal which will be used for the general purposes of the Institute, and more especially for the certificates of membership and stationery.

The "Transactions" will be issued in a different form from the first two volumes, by making the size conform to the standard adopted by other engineering societies. In future issues of the "Transactions" abstracts of articles, papers, and communications from all sources will be included so as to keep the members posted in facts regarding the nature, properties, and use of concrete and reinforced concrete and the materials of which they are composed.

With a view to the removal of restrictions in the building by-laws in respect to the construction of reinforced concrete and the short loan periods granted by the Local Government Board on structures of such material, the Parliamentary Committee has been in communication with the Board in reference to by-laws respecting reinforced concrete construction and walls of new buildings, and the reply, dated December 8, 1909, stated:

"The Board are only aware of one authority, the Urban District Council of Newquay, Cornwall, who have in force by-laws specially dealing, except in connection with steel framing, with the construction of buildings of ferro-concrete. The Board confirmed a series of by-laws for that authority on the 22nd October 1909, which has the effect of allowing the walls of new buildings to be constructed of reinforced concrete of such thickness as shall be necessary to secure due stability. Some local authorities, including the Town Councils of Leeds, Salford, and Windsor and the Urban District Councils of Brentford, King's Norton, and Northfield, Penge, and Southall Norwood, have made by-laws allowing the construction of buildings of steel framing filled in with brick or other incombustible material, which, of course, includes ferro-concrete. . . . In a large number of rural districts in the country either there are no by-laws in force regulating buildings or the by-laws are based on the Board's rural code, which makes no provision as to the structure of walls for securing stability or the prevention of fires. In such districts the construction of buildings of ferro-concrete would be unrestricted. In many other districts a by-law has been adopted similar to that numbered 1 in the Board's provisional Intermediate Model, which allows the erection of domestic buildings, subject to certain conditions as to size and position, of other material than brick or stone. The use of ferro-concrete would thus be permitted in the construction of such buildings. The Board may say that they have not found that a large number of local authorities have expressed a wish to make provision in their by-laws for the use of ferro-concrete. They will, however, bear in mind the question of regulating its use in any future edition of the urban model code which they may issue."

The Parliamentary Standing Committee of the Institute replied to the Local Government Board, suggesting the

inclusion of provisions in the Model Code to permit the use of hollow concrete blocks for walls.

As regards the work of the Science Standing Committee, Mr. W. G. Kirkaldy, Assoc.M.Inst.C.E., Mr. Bertram Blount, F.I.C., and Mr. H. D. Searles-Wood, F.R.I.B.A., F.S.I., were appointed by the Council as additional members. Mr. E. R. Matthews resigned membership of the Committee owing to his inability to attend. The Committee as recorded above had under consideration the Draft London Regulations for reinforced concrete, and it also considered in detail the 1909 report of the Joint Committee on Reinforced Concrete appointed by the Royal Institute of British Architects, and made various recommendations to be put forward by the Institute's representatives when the revision of the report was under consideration.

A joint committee is being formed by the Science Committee to inquire into the proper loads to be allowed for in the design of highway bridges, and the Institution of Municipal and County Engineers and the Institution of Municipal Engineers have already appointed representatives.

The Science Committee drafted a report on the rusting of steel inside a concrete covering, which was submitted at a general meeting on March 9, 1911. In connection with this report a deputation of members of the Concrete Institute visited a number of reinforced concrete works in Paris, an account of which visit is recorded in the "Transactions."

The standard notation for calculations for reinforced concrete, which was drafted by the Science Committee and approved by the Council, has been favourably received and will in all probability be adopted by the Joint Committee on Reinforced Concrete, appointed by the Royal Institute of British Architects, in their revision of the report first issued by them in 1907, and by the London County Council in their regulations governing the erection of reinforced concrete structures in London. It has also been adopted by the authors of text-books, and is to be considered by the American Joint Committee on Concrete and Reinforced Concrete. It therefore promises to be of considerable utility.

Mr. W. T. Hatch, finding it impossible to devote the time to the duties of Chairman of the Tests Standing Committee, Mr. William G. Kirkaldy, Assoc.M.Inst.C.E., was appointed Chairman in his stead. Mr. A. Alban H. Scott, M.S.A., was appointed Hon. Secretary of the Committee, and Mr. A. C. Davis, Mr. Alexander Drew, Mr. P. M. Fraser, A.R.I.B.A., Mr. William F. King, Mr. R. H. Harry Stanger, Assoc.M.Inst.C.E., and Mr. E. P. Wells were appointed additional ordinary members. The Tests Committee is collecting data regarding aggregates and compression tests on concretes made with various mixtures. Information is also being collected regarding the presence of sulphur in concrete aggregates, and various other subjects are under consideration with a view to the issuing of reports dealing therewith in due course. Suggested standards for tests as to the crushing resistance of concrete are being drafted and will also form the subject for a report.

The Reinforced Concrete Practice Standing Committee to which the Council appointed Mr. E. P. Wells as an additional member, has in hand a report on the standardising of drawings for reinforced concrete, which it is hoped to issue shortly, and other subjects being investigated are methods of treating the surface of concrete, the cracks due to expansion and contraction in reinforced concrete, the consistency of concrete, and conditions of contract relating to sub-contractors for reinforced concrete work.

THE QUEEN VICTORIA MEMORIAL.

IT was with fitting pomp and circumstance, and under ideal weather conditions, that the Queen Victoria Memorial erected in front of Buckingham Palace was unveiled on Tuesday last. To all artists a pleasing feature of the ceremony was the well-deserved knighthood conferred on Mr. Thomas Brock, R.A., the sculptor, at the foot of his great work.

It is exactly ten years ago since the Executive Committee appointed by King Edward VII. entrusted the task of preparing a design for the monument to Sir Thomas Brock. Five architects were invited to compete for the design of the architectural setting, viz., Mr. Ernest George, A.R.A., Mr. T. G. Jackson, R.A., Sir Aston Webb, R.A., Sir Rowand Anderson, LL.D., and the late Sir Thomas Drew, P.R.H.A., that of Sir Aston Webb being accepted. It was proposed that the sculptor should travel on the Continent for twelve months in order to make a close study of the many great memorials. But instead of doing so Sir Thomas Brock prepared sketch models to one-tenth size, and these were considered so success-

ful that the itinerary was abandoned. The design was approved by King Edward in June 1902. The model was subsequently exhibited at the Royal Academy.

Two years ago the lower portion was opened to the public. This embraced the marble fountains and basins, retaining walls, sculptured reliefs (bronze and marble), granite paving, steps and plateau, as well as the bronze electric lamps. The work accounted for one thousand tons of marble and eight hundred tons of granite. The sculptor had also at that time all complete in his specially-built studio on Primrose Hill, Regent's Park, the figure of Her late Majesty, as well as the groups of "Justice" and "Motherhood." Next came the gilt figure of "Victory" surmounting the great central feature, and the bronze figures of "Courage" and "Constancy" at "Victory's" feet. There still remain to be put into position the six bronze groups around the fountains before this splendid work can be regarded as complete.

The 108,000 gallons of water required per hour is provided by shallow wells sunk in the gravel at the end of the lake in St. James's Park, augmented by a supply from the lake itself. The total amount of the subscriptions received was 323,609*l.*, contributed by the dominions, colonies, and dependencies of the Empire, by British subjects resident in foreign countries, and by citizens of the United States.

THE ILLUMINATING ENGINEERING SOCIETY.

(Continued from last week.)

DULWICH COLLEGE is interesting because the older part of the building is lighted by gas and the newer science buildings by electricity. The big hall, where assemblies take place and evening preparation is also done, is lighted by two rows of twin incandescent burners down the sides of the hall. The mantles are completely covered in by opal globes, and this, while giving a soft and diffused light, also absorbs a good deal. The result is that midway between the lamps there is only about 0.6 to 0.7 foot-candles, much less than that met with in the elementary schools visited. In the classrooms inverted opal bowls covering twin incandescent burners are used, the light being partly transmitted and partly thrown down by the white ceiling. From the standpoint of absence of glare the method has much to recommend it, but the illumination is weak, being under 0.75 foot-candles in the case of some of the more remote desks, and the blackboard illumination is also low. It may be added that until two years ago, we were informed, the lighting was all by flat-flame burners.

Carbon filament clear-bulb lamps (8 c.p., 205 volts) are used in the electrically lighted rooms; they are hung in a cluster without any form of shade, and are in the direct line of vision from the back desks to the blackboards; the position is also clearly disadvantageous as regards distribution of light, and inclined to throw head shadows. It is not surprising to find that the back desks receive only 0.4—0.6 foot-candles.

(The school library is lighted in a rather interesting manner, by inverted electric incandescent lamp fixtures: it was, however, undergoing alterations on the occasion of our visit, so that no tests could be made.)

In St. Paul's School the lighting is by electricity. The assembly hall is illuminated by rows of 110 volt tungsten lamps high up on the battens. This high position is again favourable to reducing the effect of glare, but it leads to a somewhat low illumination over the hall, only 0.7 to 0.8 foot-candles. This room is used for assembly, but only occasionally for classes. In the classrooms the order of illumination was about 2.5 foot-candles over the desks; clear bulb lamps with ordinary opal shades were used.

In the City of London School artificial lighting is of minor importance, as work ends at 3 p.m. The Assembly Hall is in this case never used for class-work; the artificial illumination over the hall is, indeed, too weak for it to be conveniently used for this purpose. The centre of the room is so far from the side brackets that it only receives about 0.3 foot-candles. On special occasions, it was stated, the gas "suns" near the roof, with flat-flame burners, are also lighted, but this is only rarely done.

In the classrooms the illumination was also low, in some cases only 0.4—0.7 foot-candles, but, as stated above, artificial light is not much used. Clear bulb carbon filament lamps (200 volts), with ordinary opal shades, are used.

It also occurred to the authors that it would be of interest to collect, and transfer into British units, some data regarding Continental schools. As an example of these we

have reproduced Table III., which is taken from Bloch Grundzüge der Beleuchtungstechnik (p. 124), and Table I.

The most striking points to be observed are the relatively high illumination and the good uniformity of the results obtained. On the other hand, the consumption per square foot of floor area does not seem noticeably different from that usually met with in this country. Special interest attaches to the high-pressure indirect gas-lighting which has been utilised in Munich and elsewhere, and which excellent results are said to have been attained. Among the chief claims made for indirect lighting are that the actual brilliant source of light is well screened from the eye; that the method conduces to uniformity, and that the possibility of shadows being cast by the writing hand is reduced to a minimum.

In this connexion it is of interest to make passing reference to the work of Dr. Max Oker-Blom, of the University of Helsingfors, Finland (*Int. Archiv. f. Schulhygiene*, January 1911), to which Dr. Kerr kindly drew our attention. Artificial lighting is of special consequence in this locality in view of the short winter days. Thus Helsingfors on January 15 only receives 6 h. 40 min. of daylight, and Sodanklä 3 h. 32 min., while in Utsjoki the sun does not rise at all for two months. The author referred to describing a series of experiments, using direct lighting with different groupings of lamps. He presents half-tone illustrations of the hand shadows on the desks in various parts of the room; there were almost invariably some desks on which inconvenient shadows were cast.

A number of types of shades are met with in various schools. The commonest arrangement consists in the use of the ordinary opal shade and a clear bulb metallic flame lamp.

This is almost always unsatisfactory, because the illumination is imperfectly shaded, and therefore, when the lamps are placed more or less in the direct range of vision, dazzling to the eye. A better arrangement is that with completely frosted lamps. It is employed at Harrow, in the new rooms at the Northampton Institute, &c. By complete frosting the lamps the glare is diminished, but a considerable amount of light is lost; moreover, even a frosted lamp when hung somewhat low, is probably inconvenient to some extent. A preferable type of shade seems to be that now used by the London County Council, and in use at Haverstock Hill, at the Arts and Crafts School, &c. This completely screens the lamp, which need only be half frosted.

One distinctly peculiar arrangement is the bunch of unshaded clear bulb lamps used in the Science Buildings at Dulwich College.

The design of shades for gas-lighting has been dealt with by Dr. Harman. In this case also it is desirable that the mantle should be completely screened from the eye. Except for the loss of light involved, the opal bowls used at Dulwich College are satisfactory. The rooms lighted in this manner have a pleasant "soft" appearance, but the illumination, as stated, was somewhat low. At the East London College the illumination is supplied by Holophane glassware or reflector bowls, hung high up, being used in the lecture theatre with very satisfactory results.

In the case of colleges the question of illumination assumes a somewhat different aspect. The lighting of lecture theatre, drawing offices, or laboratories, are quite distinct problems. It may be remarked, however, that, whereas in the case of elementary schools it is often necessary to practise rigid economy, this is less often the case for college. Engineering institutions in particular might be expected to do their lighting well, not only because the staff should presumably possess a technical interest in the subject, but also because they have frequently a lighting plant of their own which is more than sufficient to supply generous illumination to the entire building.

One would suppose that a lecture theatre, in the design of which special pains are often taken, would be regarded as furnishing an opportunity for special ingenuity in securing the most ideal lighting conditions, and that a priority would be taken in securing the most perfect arrangement. At present, however, it must be confessed that in most cases the lighting is often of a rule of thumb order, electric clear bulb lamps with opal shades, at regular intervals, forming the sole means of lighting. Even when frosted lamps are employed there is a risk of the lights interfering with the comfort of the audience unless their position is carefully determined.

Theoretically one would imagine that the chief essential in a lecture theatre is, as in classrooms, the provision of sufficient illumination on the desks, coupled with the avoidance

nce of any glaring lights such as weary the eyes of students nd make it difficult for the lecturer to see his audience. The latter condition was rarely satisfactorily complied with n the colleges visited. The next point to be considered ould be the desirability of special lighting of the blackboard nd diagram sheet, and of the lecture table where experi- nents are frequently arranged and which is the central oint of interest. Here again it proved to be unusual for pecial provision to be made for this purpose, and such ethods as are used at present are clearly open to improve- ment. Indeed the illumination on the lecture table only arely exceeds that on the desks, the reverse being often true. In most cases, the light is very unevenly distributed the problem being similar to the lighting of shelves in

libraries), and the expenditure of energy devoted to this object appears excessive in comparison with that of the rest of the room.

An interesting method of lighting has been adopted in the electrical engineering lecture theatre of the Central Technical College. The general illumination is provided by tungsten lamps surrounded by paper screens and hung near the white ceiling; the effect is pleasant and subdued. Two screened enclosed arcs are used to furnish extra illumination for the demonstration table and diagrams. The illumination on the desks is 1.3 foot-candles, and on the lecture table 4.5 foot-candles.

In some institutions visited, *e.g.* South-Western Polytechnic, Westminster Technical Institute, &c., inverted arcs

TABLE I.—ILLUMINATION DATA OF L.C.C. SCHOOLS.

TABLE I.—ILLUMINATION DATA OF L.C.C. SCHOOLS.							Illumination (Foot-candles).		
School.	Nature of Lighting.	Cubic Feet per Hour.	Cubic Feet per Hour per Square Foot.	Demonstration Table.	Desks.		Black-board.		
					Measured.	Measured.			
<i>Gas.</i>									
RIVERSDALE, SOUTHFIELDS.									
Classroom (infants) ...	4 incandescent burners Kern No. 4, with opal globes and reflectors ...	16	0.040	3.5	4.5-5.0	1.7-2.0			
Assembly hall ...	6 twin incandescent burners, Kern ...	48	0.033	3.2	2.4-3.6	—			
RICHARD STREET, ISLINGTON.									
Classroom (1) ...	4 upright incandescent burners, with opal shades ...	—	0.04	—	1.8-4.5	0.8-2.0			
" (2) ...	4 twin upright incandescent burners unshaded ...	—	0.08	—	2.2-3.0	3.5-3.9			
Large room, used for needle-work, &c. ...	10 twin upright incandescent burners ...	—	0.04	—	2.5-3.0	2.3			
<i>Electric.</i>									
HAVERSTOCK HILL.									
Typical classroom ...	Tungsten (opal shades) ...	220	0.5	—	2.0-2.5	3.5			
CHARING CROSS ROAD.									
Classroom ...	Carbon (with opal shades) ...	660	1.2	2.5	1.6-3.0	1.2-2.5			
Cookery room ...	" " ...	420	1.1	0.75-1.6 (Dresser 0.1-0.2)	1.7-2.5	0.8			
Laundry room ...	" " ...	480	1.2	1.8-2.8 (Sink and Mangle 0.4)	0.9-1.8	0.5			

TABLE II.—ILLUMINATION DATA OF PUBLIC SCHOOLS.

TABLE II.—ILLUMINATION DATA OF PUBLIC SCHOOLS.									
School.	Nature of Lighting.	Consumption in Watts.	Total Watts per Square Foot.	Illumination (Foot-candles).					
				Tables.	Desks. Measurel.	Blackboard.			
HARROW.									
Headmaster's classroom ...	Tungsten (frosted) ...	125	0.05	3 0	2.0-3.0	2.2			
Mathematics classroom ...	" " ...	250	0.45	5 2	1.5-4.5	1.8-3.0			
Mathematics classroom ...	" " ...	220	0.5	2 2	1.6-4.4	1.4-8.0			
Examination hall ...	" " ...	750	0.5	1.8-2.6	0.5-5.0	1.6			
ST. PAUL'S.									
Classroom ...	Tungsten (opal shades) ...	245	0.49	5.3	2.4-2.8	2.8			
	Carbon " " ...	120							
Assembly hall ...	Tungsten (on battens 35 feet above floor) ...	2,590	0.81	2.0-2.8	0.7-0.8	—			
					0.9 under gallery.				
CITY OF LONDON.									
Classroom ...	Carbon (opal shades) ...	300	0.62	1.6	0.4-0.7	0.7-0.9			
Assembly hall ...	Tungsten... ..	2,110	0.47	1.6	0.3-0.7	—			
				on platform.					
DULWICH (Science Buildings).									
Physics lecture room ...	Carbon ...	450	0.6	72.0	0.4-1.6	2.0			
Chemical laboratory ...	" " ...	600	0.8	2.0	1.1-1.6	—			

TABLE III.—ILLUMINATION IN SCHOOLROOMS IN GERMANY.

[Based on figures derived from data presented by the Munich Commission and other authorities, and tabulated in Grundzüge der Beleuchtungstechnik (L. Bloch), p. 124.]

Beleuchtungstechnik (L. Bloch), p. 124.]									
Nature of Lighting.	No. of Lamps.	Power Consumed per Lamp.	Floor Area (Sq. Feet).	Total Watts per Square Foot (Approximate).	Total Watts per Square Foot per Foot-candle.	Illumination in Foot-candles.			Diversity Co. efficient.
						Mean.	Max.	Min.	
<i>Electric.</i>									
		<i>Watts.</i>							
D.C. Arc Lamps Vertical Carbons	{ 3	770	1,700	1.35	0.23	5.7	6.9	4.6	1.5
	{ 2	550	780	1.4	0.27	5.2	7.0	3.5	1.95
	{ 2	605	1,040	1.2	0.21	5.7	—	—	—
	{ 4	540	1,650	1.3	0.32	4.0	5.5	2.45	2.2
	{ 2	550	780	1.4	0.33	4.2	5.8	2.45	2.4
D.C. Inverted Arcs	{ 3	735	1,700	1.3	0.15	8.9	11.2	6.7	1.7
	{ 3	715	1,700	1.25	0.155	8.0	9.7	6.3	1.55
	{ 2	650	780	1.7	0.245	6.9	11.0	3.6	3.0
		(Consumption in Cubic Feet per Hour per Lamp.	Total Consumption Cubic Feet per Hour per Square Foot.		Total Consumption Cubic Feet per Hour per Square Foot per Foot-candle.				
<i>Gas.</i>									
Low Pressure Incandescent	{ 52	3.8	1,700	0.12	0.016	7.4	8.6	6.0	1.4
	{ 14	4.2	1,040	0.06	0.0145	4.1	—	—	—
High Pressure (Selas)	10	13.2	1,700	0.08	0.011	7.0	8.0	6.1	1.3
High Pressure (Millennium)	{ 8	17.1	1,700	0.08	0.0115	6.9	8.5	5.8	1.45
	{ 6	8.6	840	0.06	0.0095	6.2	6.7	5.3	1.25

are utilised for the general lecture theatre lighting. The system, in conjunction with special local illumination for blackboard and demonstration table, has certain advantages as regards distribution of light, absence of glare, &c., and the very "flatness" of the impression, if it serves to accentuate the more brightly lighted parts of the room, may be a merit. It is, however, essential in such cases to select well-designed lamps and good quality carbons; otherwise the flickering and spluttering of the lamps when turned on and off for lantern slides, &c., is apt to be an annoyance.

The general order of illumination in classrooms is about two foot-candles, although isolated instances in which some, or even the majority, of the desks received only 0.5 foot-candles were met with.

Indirect arc-lighting, and an intensity of illumination of four to six foot-candles is frequently used for drawing offices. When pendants are used it should hardly be necessary to point out the desirability of good shading. The arrangement used at one London technical college embodies a number of defects. The draughtsman can see the unscreened filament of the lamp at a distance of less than three feet away, and not only this, but all the rows of lamps in front of him are visible. Possibly objection might also be taken to the direction from which the light comes, but it would take us too far afield to consider all the details of drawing-office lighting.

TABLE IV.—ILLUMINATION IN VARIOUS ROOMS IN THE TECHNISCHE HOCHSCHULE, MUNICH.

(Report of the Commission appointed by the Deutsches Verein von Gas- und Wasserfachmännern, 1907.)

Nature of Illumination of School Room.	Illumination on Desks, (Foot-candles).		Diversity Co-efficient	
	Max.	Min.	Mean	Max.
Incandescent gas, semi-indirect...	2.6	2.0	2.3	1.3
Electric arc lamps (3 in series), semi-indirect ...	4.7	1.6	3.1	3.0
Electric arc lamps (2 in series), semi-direct ...	4.1	1.5	2.8	2.7
Incandescent gas, indirect ...	8.6	6.0	7.3	1.4
Selas incandescent gas, indirect...	8.0	6.0	7.0	1.3
Selas incandescent gas, indirect...	7.3	5.2	6.2	1.4
Selas incandescent gas, indirect...	9.0	6.2	7.6	1.45
Millennium incandescent gas, indirect...	8.5	6.0	7.2	1.4
Electric arc lamps, indirect lighting, ordinary carbons ...	7.0	4.6	5.8	1.3
Electric arc lamps, indirect lighting, inverted carbons ...	11.1	6.7	8.9	1.65
Electric arc lamps, indirect lighting, inverted carbons ...	9.6	6.3	7.9	1.5

N.B.—It may be noted that this Commission seems to have been of a very representative character, receiving the assistance of Herr Arzberger, Chief Engineer of the Munich Gas Works, Dr. Schneider, an oculist in Munich, Herr Utzinger, Chief Engineer of the Siemens-Schuckert Co., and others, and the co-operation of the Munich Institute of Hygiene.

Finally, it may be pointed out that the effectiveness of experiments often depends on all the apparatus being clearly visible, and the use of special portable and well-screened lights for this purpose is to be encouraged.

It is very interesting to observe that, just as in the case of libraries, the average illumination in schoolrooms seems to be in the neighbourhood of 2.3 foot-candles, and it may be suggested that this standard should be aimed at and preserved when ordinary class work is to be done. But when extra fine work, sewing, &c., is carried out, a considerably higher value, say 5-10 foot-candles, seems to be required. A value of this order is commonly met with in drawing-offices, &c. As has been pointed out by Dr. Harman, the requirements of children and adults differ somewhat: it is particularly vital to supply good illumination for infants and growing children.

The second point that seems to require emphasis is the need for effective shading. There are still far too many cases in which undesirably bright sources of light are left unscreened and allowed to dazzle the eyes of students or children. No unscreened source should be allowed near the direct line of view.

The third point is the need for special local illumination of teacher's, or demonstration, table and the blackboard. At the same time it is admitted that the present methods of blackboard lighting could be improved by scientific study, and there seems a need for some form of fixture which will distribute the light quite evenly and screen the eyes of the audience while doing so.

Daylight, unlike artificial illumination, can be only very imperfectly controlled. The access of daylight is mainly determined by architectural considerations, and success or failure in this respect depends on the forethought of the

architect. One may therefore lay stress on the need for consultation between the architect, the medical officer, and the lighting engineer before a school is built—a course which seems to be often followed on the Continent.

(To be continued.)

OUR CONTEMPORARIES FROM OVERSEAS

THE American Architect (New York) has included in a recent number numerous illustrations of the cathedral church of St. John the Divine, New York, the first portion of which, after twenty years' work by the architects, Messrs. Heins & LaFarge, has now been consecrated. An illustrated article on Philadelphia's seventeenth annual architectural exhibition gives an opportunity of estimating the quality, which is high, of the latest work of the architects of Pennsylvania.

The Architectural Record (New York) for this month illustrates and describes "The Home of an Architect," Mr. R. P. Huntington, of the firm of Hoppin, Koen & Huntington. Two fascinating articles deal, one with "Andalusian Gardens," the other with "Old Sienna." Town architecture in New York forms the subject of an article on "Mitigating the Gridiron Street Plan," the devices considered being the treatment of rounding the corners and the closed vista, or "stopping the streets."

Arquitectura (Barcelona) contains an example of Spanish town planning in the form of a design for the Nueva Plaza de España at Madrid, by Don Jesus Carrasco.

Berliner Architekturwelt (Berlin) also devotes space and illustrations to town planning, with reproductions of some of the competition designs for the lay-out of the Rüdesheimer Platz. Other subjects this month are a hospital at Reinickendorf, of which Herren Mohr & Weidner are the architects, a yacht-club house on the Wannsee, some very picturesque small houses both in town and country, and some typical modern business premises in Berlin. Altogether a number quite varied in interest.

Construction (Toronto) gives descriptions and illustrations, including plans and elevations, of five of the competition designs for the new Ontario Government House, Toronto, including that of the first prize winner, Mr. George W. King. Mr. Donn Barber's Connecticut State Library and Supreme Court Building at Hartford is shown by some excellent photographs.

La Construction Moderne (Paris) has recently illustrated a new Baptist church at Nice by Mons. Paul Emile Dubois and a design by Messrs. E. Dhucque & Blondel for the opening up and forecourt treatment of the Palais de Justice at Brussels.

Het Huis (Amsterdam) has an illustrated description of a walk through the picturesque little town of Medemblik and an article on the Raadhuis of Haarlem.

Moderne Bauformen (Stuttgart) shows us what the modern art student of Germany is doing by examples of work from the Kunstgewerbeschule at Hamburg. It is, of course, very "new art." Many of the illustrations are well produced in colour, and some of these are quite satisfactory. The business premises of Fischbein & Mendel at Berlin, of which Herr Hans Bernoulli is the architect, are fully illustrated, and contain some excellent interior treatment. Several examples of Mr. C. F. A. Voysey's work are included in this month's number.

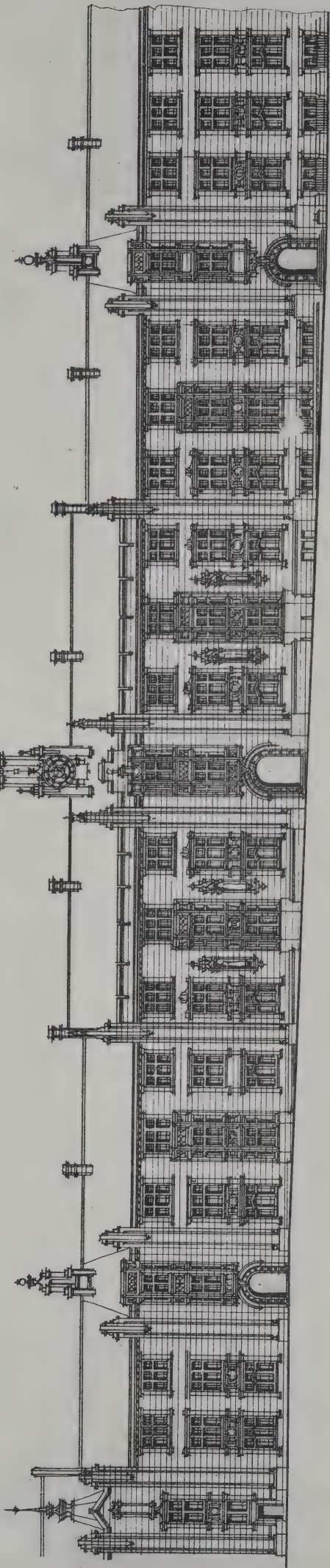
The New York Architect (New York) is a monograph on the cathedral of St. John the Divine, New York, very exquisitely illustrated.

The Western Architect (Minneapolis) for this month is devoted entirely to cottages and residences, not confined to the Western States, which, though many are more or less of the bungalow type, yet include some more stately houses, thus affording a capital conspectus of domestic architecture as it is in the States to-day, with one example—a house by Mr. E. B. Maufe—for the comparison of English work.

Engineering Record (New York) has an instructive paper on "Profitable and Fruitless Lines of Endeavour in Public Health Work," by Edwin O. Jordan, Professor of Bacteriology, University of Chicago, which takes a rational view of the absurd pre-eminence of "the drains" in the public mind as the alpha and omega of sanitation. The effective results in smoke abatement by supervision of plant construction obtained by the methods followed by the Smoke Inspection Department of Chicago are explained by reference to the report of Mr. P. P. Bird. A short article on "Rust-proof Slag Paint," by Mr. E. C. E. Lord, is worthy of notice.

*Municipal Offices and
Town Hall, Coventry.*

Scale of feet
0 10 20 30 40 50 60 70 80



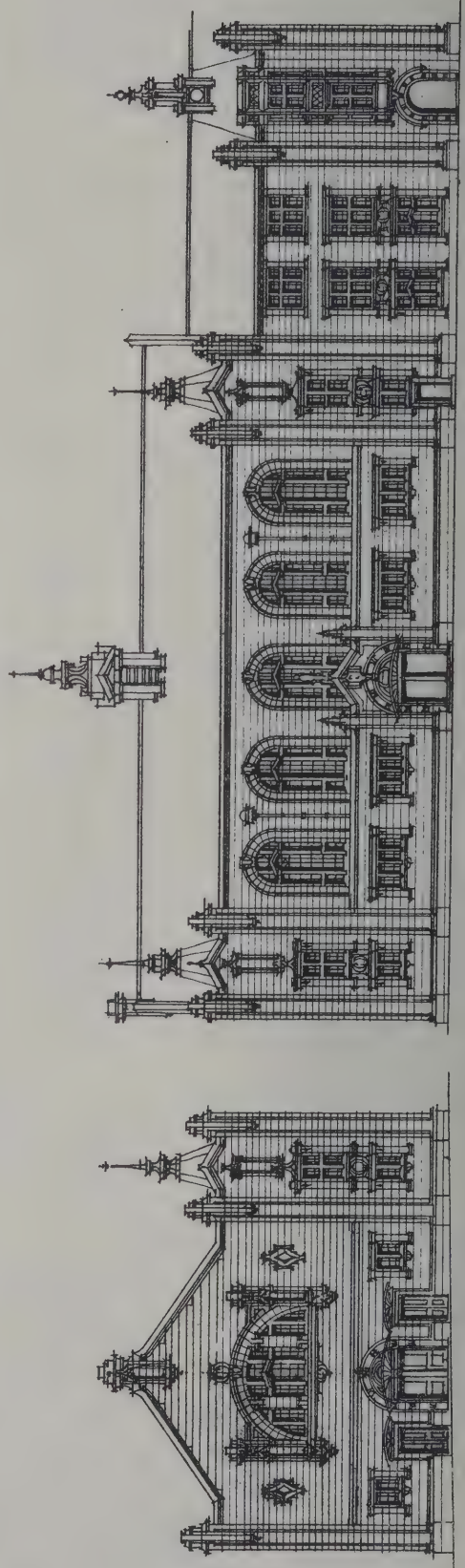
*Elevation to
High Lane.*

*Angle
Entrance*

*Elevation to
Hand Street.*

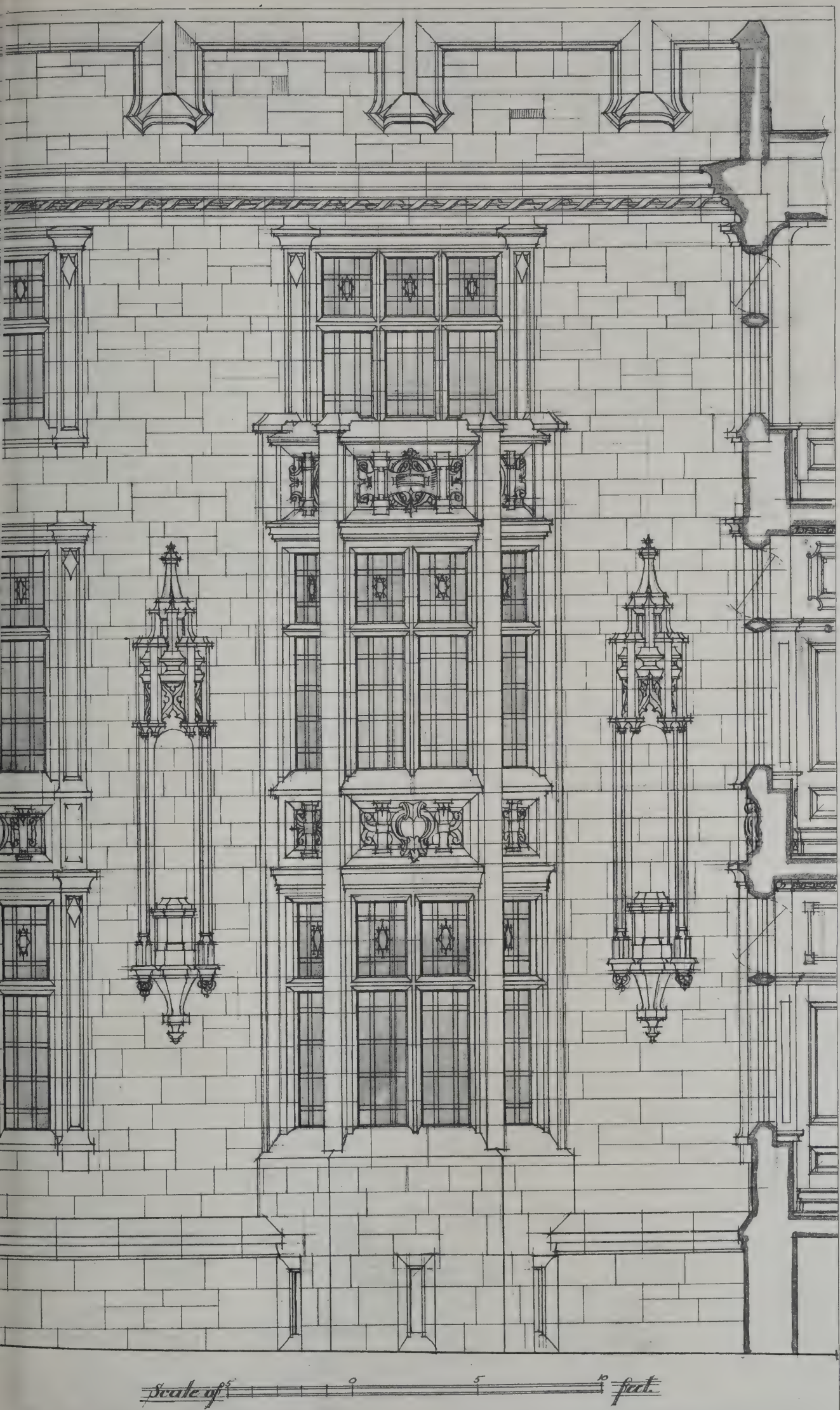
*Angle
Entrance*

*Elevation to
St. Mary St.*



*Elevation to
High Lane.*

*Elevation to
High Lane.*



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COVENTRY MUNICIPAL BUILDINGS:
DETAIL OF COMPETITION DESIGN BY MESSRS. NICOL & NICOL.





THE ROYAL SHRINE AT WESTMINSTER AS IT MAY HAVE BEEN A.D. 1400.

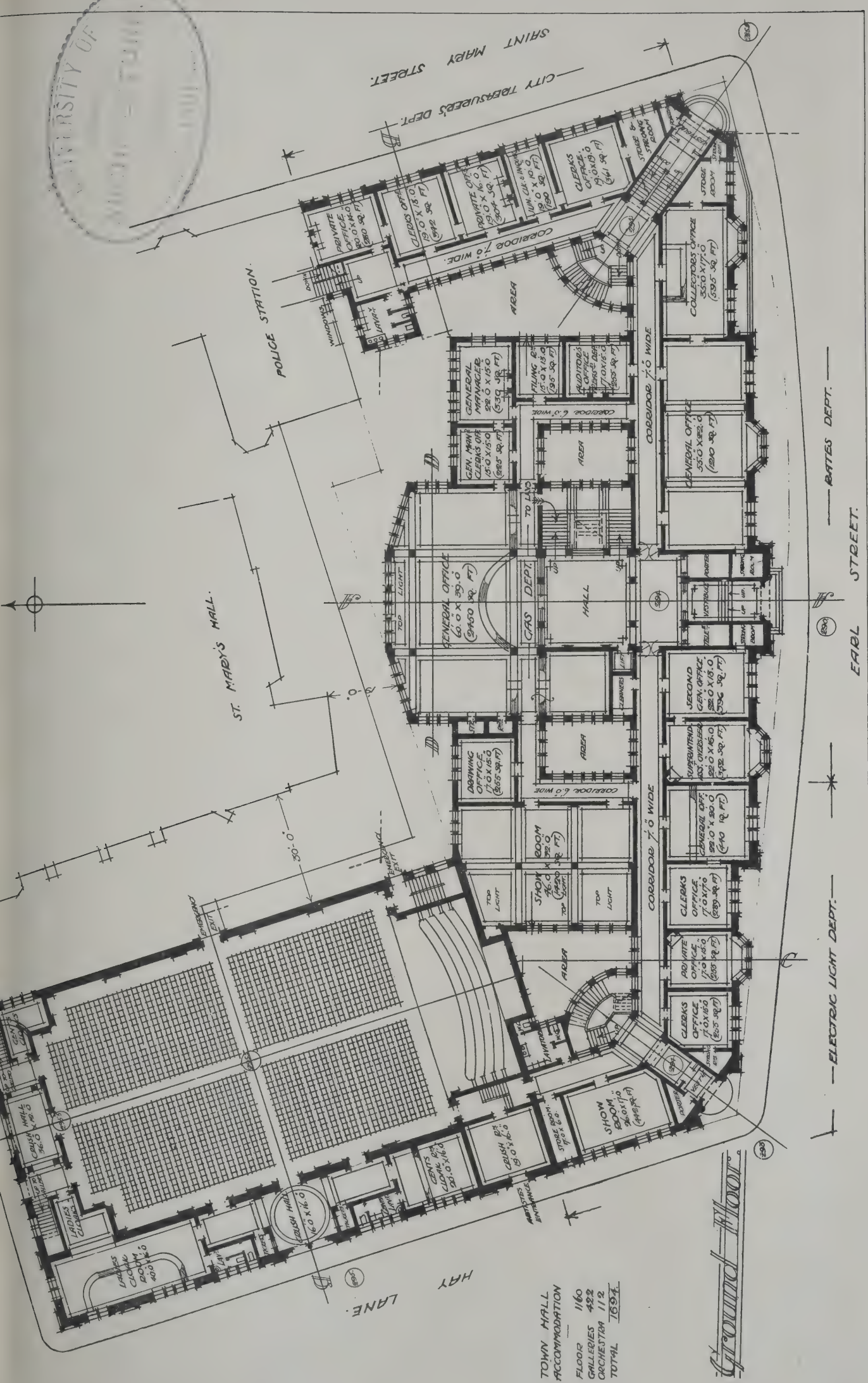
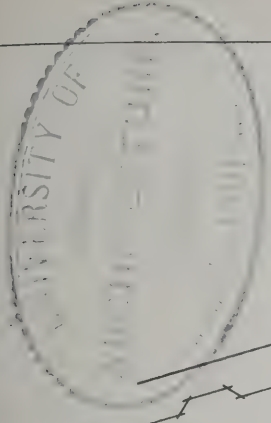
Front Drawing by Mr J HAROLD GIBBONS, A.R.I.B.A.

Municipal Offices and
Town Hall Coventry



TOWN HALL	
ACCOMMODATION.	
<hr/>	
FLOOR... 1160.	
GALLERIES. 422.	
ORCHESTRA. 112.	
<hr/>	
TOTAL	1694.

First Floor:



TOWN HALL	
ACCOMMODATION	1160
FLOOR	492
GALLERIES	112
CORCHESTRA	1694
TOTAL	

Ground Floor

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COMPETITION DESIGN BY MESSRS. NICOL & NICOL

The Architect.

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FORTHCOMING EVENTS.

- Saturday, May 27.*
- Architectural Association : Annual Sports of the Athletic Club at Boreham Wood, Elstree.
 - Northern Architectural Association : Students' Sketching Club Meeting.
 - Society of Engineers : Annual Meeting.
 - Manchester Society of Architects : Visit to Liverpool to see Students' Union Building (Professor Reilly, architect), School of Architecture Studios, and the Cathedral (Mr. G. G. Scott, architect).
- Monday, May 29.*
- Architectural Association : Annual Play at the R.I.B.A. Premises ; also on May 30, May 31, and June 1.
 - Surveyors' Institution : Annual General Meeting.
 - Royal Society of Arts Annual Conversazione.
- Friday, June 2.*
- Royal Sanitary Institute : Meeting at Exeter, Discussion to be opened by Mr. J. Jerman on " Ventilation in Theory and Practice " ; also on June 3.

TUDOR DOMESTIC ARCHITECTURE.

THE gigantic labour upon which Mr. ARTHUR STRATTON has been engaged for the last five years has now been finished, and Mr. BATSFORD is able to offer to all lovers of English art a complete work on the domestic architecture of England during the Tudor period* which takes a high position amongst the monumental architectural books in the English language, and worthily completes the presentment of our national domestic architecture commenced by Mr. J. A. GORCH and Messrs. BELCHER and MACARTNEY in their works on the Renaissance period.

It is good to find that the homes of England, whilst still free from the Continental influence of the Renaissance movement and guided alone by a combination of national tradition, common sense and artistic instinct, are fitly illustrated and described with no less thoroughness than has been bestowed upon later phases of our domestic architecture. We can as Englishmen feel proud that the beautiful and homely homes so excellently depicted in Mr. BATSFORD'S latest achievement are the work of English artists and craftsmen, without any hint of assistance from those of foreign nationality.

At the opening of the Tudor period the domestic architecture of England had become emancipated from the necessity of providing for the defence of house-owners against attack from hostile foes, and so during that period it was free to develop with the sole aims of beauty and comfort. Hence the houses of that period peculiarly manifest the quality of homeliness and therefore appeal more forcibly to our sympathies than do the fortified strongholds of an earlier age. There was also the very important element of waning ecclesiasticism which no longer oppressed the designers of houses with the necessity or desirability of adhering as closely as possible to the lines of contemporary church design. Thus for the first time since the Romans left Britain did domestic architecture lift its head free from subservience to the soldier or the priest.

In speaking of the Tudor period in architecture it is not necessary to limit oneself strictly to the reigns of the Tudor sovereigns any more than it is possible to confine any previous period in the development of architecture to rigid dates. Domestic architecture gradually reached the freedom it attained during the Tudor period, and accordingly Mr. GARNER and Mr. STRATTON have not restricted themselves in their selection of examples to buildings erected after the accession of HENRY VII. and

prior to the death of ELIZABETH. It is convenient to label the epoch of the emancipation of our national domestic architecture as the Tudor period because it is always useful to have a label, and this particular designation defines with sufficient clearness the chronological place of the particular phase with which we are concerned.

The scope of the work which we have now before us is then that phase in the history of our domestic architecture when homes were being built for Englishmen free from military or ecclesiastical considerations and as yet untouched by the influence of the exotic art of the Renaissance. There are several lines on which the authors might have proceeded to treat the subject of their work, but they have, we think rightly, adopted, broadly if not strictly, a chronological sequence in the order with which they have presented the various houses included in their survey.

Thus we are permitted to follow the historical development and progress of the domestic architecture of England during the Tudor period, and we do not need a complete description or even a catalogue of all the remains of Tudor domestic architecture that still exist. It is sufficient for an adequate description of what that architecture was that we should have a wise selection of typical examples, and that we certainly have in this book. Despite the ravages of time, of fire, and, most deadly of all, of the restorer and improver, there is still in England so great a wealth of Tudor houses that it would be easy to make a lengthy list of those that Mr. STRATTON has not included, but it would be difficult to point out any that ought not to have been excluded in order to give a correct and fair impression of what Tudor domestic architecture was.

Although it would be possible, as we have said, to enumerate Tudor houses which Mr. STRATTON has not described, it need not be imagined that the publisher has been niggardly in restricting the authors to a small number of illustrations. On the contrary, the book is lavishly and sumptuously furnished with collotype reproductions of admirable photographs with excellent pen and ink drawings and numerous clear and well delineated measured drawings and plans, of which the large size of the volumes permits the reproduction to adequate scale. One feature of especial interest is the inclusion of sketches and drawings by J. C. BUCKLER, WM. TWOPENY, and other artists of the past which furnish records of buildings that have now passed out of existence or have been so seriously modified that their original form would otherwise have been for us a mere matter of conjecture. There is, in fact, a well stored treasury of our national art in the 192 folio plates, of which 120 are collotype reproductions of photographs and the remainder measured drawings and sketches, besides the 364 smaller illustrations in the 250 pages of text.

* The Domestic Architecture of England during the Tudor Period. Illustrated in a series of photographs and measured drawings of country mansions, manor-houses, and smaller buildings. With historical and descriptive text, by Thomas Garner and Arthur Stratton. (London : B. T. Batsford. 6l. 6s. net in two cloth portfolios, or 7l. 7s. net in two volumes, half morocco.)

The combination of photographic views and of measured drawings renders such books as this interesting and valuable both to the amateur and the professional student of our national architecture, as we have thus presented with clearness and fidelity both the effects that have been produced by the designers of the past as well as the means by which those effects have been obtained.

We cannot help being struck as we look through these charming views of Tudor domestic work with the revelation of the source from which our ablest and most prominent domestic architects of the twentieth century have imbibed the spirit that breathes in their work. And this without any archæological pedantry in the reproduction of the forms and details used in the Tudor period, but by a comprehension and absorption of the feeling that pervaded the designers of that time and imparted to their creations that peculiar character of home-likeness which is so pre-eminently expressed in Tudor houses.

To the young architectural student of to-day we would urge that if he desires to emulate the work of Mr. LUTYENS, Mr. DAWBER, and other front rank domestic architects of our time he must do as they have done, study the domestic architecture of the Tudor period; and as a first aid in that study he will find invaluable the beautiful book which Mr. BATSFORD now offers. Six guineas would be very well spent by the poorest architectural student if it helps him only a little way towards imbibing the spirit of Tudor domestic architecture, and we are very much mistaken if he were helped not a little way but a great way in his progress.

An introduction gives a general view of the historical development of domestic architecture during the Tudor period, and also collates the examples of the use of particular materials and features in the various houses illustrated which the chronological system adopted necessarily caused to be distributed. A topographical list of subjects illustrated and an excellent index further remove any inconvenience to the reader who desires to study a special subject that the chronological method might otherwise have occasioned. Thus it is perfectly easy, for example, to turn up the examples of oriel windows illustrated or to find what houses in, say, the county of Sussex have been included.

Turning now to the principal plates we find No. 1 is a view of the Prior's House, Much Wenlock, where, although connected with an ecclesiastical foundation, the domestic character of the house is strongly in evidence. Following we have in the earlier dated examples the survival of tracery of a modest character which only gradually gives place to a dominant use of square headed lights to the mullioned windows. The large size of the photographic illustrations and their exquisite reproduction gives full value to the texture of the buildings, whether due to the original construction or to the effect of nature's weathering, so that for the man who has already carefully studied Tudor architecture the measured drawings are scarcely necessary, but for the younger student their value is supreme.

No detail of Tudor houses is omitted from consideration and illustration; stonework, brickwork, half timber, panelling, carving, metalwork, glass are all included, and, as we have already mentioned, valuable records of houses "now destroyed" are included with the illustrations of those happily still existing. In fine we cannot imagine that the domestic architecture of England during the Tudor period could have been more worthily, more sympathetically, or more thoroughly treated than it has been by the labours of the late Mr. THOMAS GARNER and of Mr. ARTHUR STRATTON and their collaborators.

NOTES AND COMMENTS.

ALTHOUGH, as customary with exhibitions, the so-called Coronation Exhibition at the White City at Shepherd's Bush was not finished by the opening day, the Palace of Art gives evidence of being of some real interest. Architecturally there are some models of parts of buildings, as, for instance, Sir ASTON WEBB'S

Admiralty Buildings at Whitehall. There are some good examples of wood-carving and of sculpture as applied to building, whilst amongst the etchings are not a few of architectural character. The native craftsmanship of India still retains much of its traditional artistic instinct and hence the collection of workers from the Indian Empire is a feature of the exhibition that has rather more than merely popular interest. It is always fascinating to see an artist at work, whatever may be his particular craft.

THE Coronation Number of the *Pall Mall Magazine* has an excellent article on the Queen Victoria Memorial in which the story of its making is put into popular language, and so gives the British Philistine the opportunity of comprehending what is the process of making a memorial and the labour and thought that are required of a sculptor in his work. The article is illustrated by some admirable photographs.

By the passing through all stages in both Houses of Parliament, save that of Royal assent, of the "Greater Birmingham Bill," the second largest city in Great Britain is on the point of coming into being, and important problems in town planning come into view. As we have previously noted in these columns, Birmingham has already received the sanction of the Local Government Board to the preparation of two large schemes, one on the west and the other on the east side of the city. The additional parishes added to the area over which the City Council of Birmingham has authority will enable comprehensive schemes of town planning to be prepared and considered, so that Birmingham bids fair to be, with the characteristic progressive public spirit of its citizens a premier example of a well-organised city of the first rank. Details of the many varied municipal activities of the new city are fully described in a special supplement to the *Birmingham Daily Post* of last Monday.

THE opening of St. William's College, York, with its attached Maclagan Memorial Hall as Convocation House for the Northern Province, marks the completion of the restoration, under Mr. TEMPLE MOORE, of one of the most interesting remains of the mediæval city of York. It is gratifying to know that such a valuable ancient monument of the art of the past has been four-fitted for a purpose which is likely to ensure its permanence and reverent preservation.

SANATORIA for consumption have, as the result of experience, failed to sustain the high hopes of their usefulness that were held at the inception of the idea of open-air treatment, so that Mr. LLOYD GEORGE'S proposal to include these somewhat expensive forms of special hospitals in his national insurance scheme does not arouse enthusiasm amongst medical men. Indeed, it seems as if sanatoria for consumption can hardly be regarded as of special value other than as isolation homes for limiting the spread of infection, and for this purpose costly hospital building is unnecessary.

ALTHOUGH the Corporation of the City of London may get their own way in respect of their Bill for St. Paul's Bridge, it appears they will not be ready to commence construction for another five years, so that the time for enlightenment of the minds of the City fathers on the greater artistic and practical potentialities of the new bridge than their scheme possesses.

THAT garden suburbs and cottage homes are not the universal benefit which some town-planning "experts" would have us believe is shown by the report of the three delegates appointed by the Dundee Town Council to attend the recent Town Planning Conference at Edinburgh. Two were converted from the Scottish preference for tenements, but the minority report pointed out that three-fourths of the dwellings in Dundee were let at rents of 10*l.* and less a year, and that tenement buildings, if constructed on proper lines, were the cheapest, most comfortable, convenient, and healthful for the working classes generally.

TEMPERAMENTAL ARCHITECTURE IN THE NEW YORK CATHEDRAL CHURCH OF ST. JOHN THE DIVINE.*

By WM. H. GOODYEAR, M.A.

Curator of the Department of Fine Arts, Museum of the Brooklyn Institute; Hon. Member, Society of Architects of Rome; Hon. Member, Edinburgh Architectural Association; Hon. Member, Royal Academy of Fine Arts of Milan; Hon. Academician, Royal Academy of Venice; Corresponding Member, American Institute of Architects.

(Concluded from last week.)

SUCH reasoning certainly has greater weight as coming from a practising architect of distinction who made his practice conform to his reasoning in his most important work. Let us therefore listen to Mr. Heins, on "Refinements in Design," p. 264, vol. ii., of the Sturgis "Dictionary."

Refinements in Design.—Intentional deviations from mechanical exactness in architectural design.* These refinements do not relate to such general disposition of the masses nor to such shaping of the details as come under the head of architectural composition; they are elaborate devices, tending to give subtle artistic variety and interest to the architecture by delicate curvatures of apparently straight lines, by slight differences in sizes of corresponding parts otherwise presumably equal, and by a great number of variations and modulations too slight to attract attention as irregularities and yet sufficient to produce an agreeable effect.

The engineer's point of view, as it may be called, is that in a building straight lines should be mathematically straight, and vertical and horizontal surfaces and lines actually vertical and horizontal; also that apparently parallel surfaces and lines should be actually parallel; in a word, it assumes mechanical or mathematical accuracy of construction as a standard of excellence. The artist, however, is influenced in his ideals by what he sees in nature. His is the primordial or natural ideal and is fundamentally dependent upon free-hand work. The very irregularities, inseparable from the most perfect free-hand work, become agreeable to the trained artist sense, and just so far is the dull monotony of machine work repellent. The painter will refer for a subject in old house with picturesque variations and delicate modulations given by time, to a new villa freshly painted, which is, of course, lacking in such modulations.

It is interesting to note in Greek ornament how rarely any form is repeated. The opposite leaves of an anthemion will not be duplicates, one turn of a scroll will be almost invariably a trifle larger than another, and even in the most perfectly finished scrolls, breaks in the exact continuity of curves will occasionally be noticed. The Greeks unquestionably designed their buildings as well as their decorative patterns from the artistic standpoint, and shaped them with the free hand; hence their work was full of animation and interest, their walls, their spacing, having a charm and grace which is utterly lost in the dull copies of classical vortices made a generation ago in ignorance of the higher qualities of Greek art.

If, then, these peculiarities are hardly observed in modern architectural practice or in the instruction given to the modern architect, it is to be observed that such practice and instruction are so largely based upon drawings that, first, the student is a student not of Greek building, but of drawings of it, in which the refinements could not be given, even if the draughtsman cared for them; and, second, that the architect's career is more dependent upon the agreeable effect of his drawings upon his employer than upon the effect of his completed building. The architect to-day does not carry his free-hand design into execution, but passes it through the ordeal of mechanical draughtsmanship; whereby, as every practitioner knows, it loses immediately almost all its charm and the freshness of the original sketch, and tends to become hard and uninteresting. This tendency existed to a great extent in the time of the Renaissance; and still more generally during the Cinque Cento. The fifteenth century student of art studied and measured the remains of antiquity, and this unquestionably brought new ideas into architectural design, but he did not acquire the age-long traditions of the earlier art. Neither did he always retain the traditions of his own past, of the mediæval art in which his masters had worked. Such traditions would, with the natural decadence of art, become confused, misunderstood and overlaid with eccentricities; and it is but natural that when the rich and alluring vista of classical art opened before men's eyes, they should hasten to discard all hampering traditions, the good with the bad. In this way, while the traditions of the Greeks or the Greco-Roman builders were not to be revered, those of the Middle Ages were of course neglected.

After this introduction the article proceeds to describe the Greek refinements and the various theories which have

been advanced to explain them, and reaches the following conclusion:

If, however, we can give a satisfactory reason why a column should have an entasis, that same reason will suffice to account for all the other refinements as yet known to exist, at least in classical work. The only satisfactory explanation of them is that the entasis and other such refinements were introduced from artistic preference, from delight in the abstract beauty which results from their use.

The subject of mediæval irregularities is next taken up as follows:

With regard to mediæval buildings, the existence of apparently deliberate irregularities in measurement was pointed out by Ruskin in *The Seven Lamps of Architecture*, published in 1849, and in *The Stones of Venice*, published in 1851; and Viollet-le-Duc in the *Dictionnaire de l'Architecture Française*, s. v. *Trait* (Vol. IX., first published in 1868), deals with the same subject. There has been, however, no such comprehensive investigation as that undertaken by Professor W. H. Goodyear, of which the results were published in part in the *Architectural Record* (Vols. IV., VI., VII., VIII., IX., New York).

In such investigations great discretion must be exercised. It is evident that thrust and settlement may produce unexpected results; masonry is, moreover, plastic to a certain extent, and stone may be appreciably distorted by long-continued pressure. There is, too, the element of mere carelessness and incapacity for accurate work to be considered. The case is further complicated by the fact that these refinements are not universal in mediæval buildings. They are usually present in direct ratio to the amount of Byzantine influence visible in the work. Where they exist it is generally in larger and richer churches rather than in the poorer ones—and this has evidently some bearings upon the question whether they are the results of carelessness or of design. Where the same irregularity occurs on both sides of a church in corresponding places, where a cornice has an even and regular curvature, and examination shows that the stones were originally cut to fit the curve, where a curve in plan is regular from the base of the walls up, with no opening of joints, or where a striking irregularity of arrangement is found repeated in a large number of instances, the conclusion seems irresistible that these particular deviations were intentionally put in. * * * It is evident how inconspicuous they generally are when we consider the surprising fact that irregularities so large as some which have been pointed out should have remained unnoticed by thousands of visitors until revealed by careful measurement.

The remainder of the article is devoted to quotations of examples from individual mediæval churches, and although these examples, as published, are all taken from the Brooklyn Museum research, as described in the "Architectural Record," it is a point of much importance that the original manuscript of this article contained a number of citations of independent observations by Mr. Heins (not so mentioned by him, but so noted by me). On this account the manuscript was loaned to me and remained in my possession for about nine years. Mr. Heins asked for its return very shortly before his death and after the date of the quoted letters.

The memorial addition to the First Church at Methuen, known as the Nevins Memorial Chancel, narrows in plan from 21 feet 4 inches to 20 feet 4 inches. Mr. Heins stated in a letter to me dated April 15, 1898:

The idea was simply to avoid the harshness and monotony of exact rectangles * * * It seems to me that the effect in execution, while it is not noticeable as a distortion, unless pointed out, does make the chancel look less stiff and formal. You have so largely increased our information on this subject that I now feel safe in putting in many variations, in work of this sort, because they seem to me to make it vastly more interesting.*

Another interesting expression of Mr. Heins' views was contained in a letter which acknowledged the receipt of my "Reply to an Article in the *Builder* on the Glamour of Crooked Building" (published and circulated by the Edinburgh Architectural Association, November 1905). Mr. Heins' answer consisted of two sentences, one to acknowledge the receipt, and the other as follows: "My own point of view has led me to a very simple conclusion: Artists appreciate the glamour of crooked building, and it makes very little difference whether the rest of the world like it or not."

The natural inquiry now rises. Is the choir of St. John the Divine destined to be an exceptional and sporadic instance of revival of mediæval methods, or does it mark the beginning of a new movement in modern architecture? This inquiry suggests the remark that if the building of

* The term is capable of other interpretations; but the peculiar importance of the recently observed and surprising deviations mentioned in the definition above requires special examination.

* It may not be immediately obvious to those who have not paid attention to the subject that the actual effect of deflections in plan is to change and confuse the effects in elevation, but such is the case. The resulting optical effects of deflections in plan are effects in elevation.

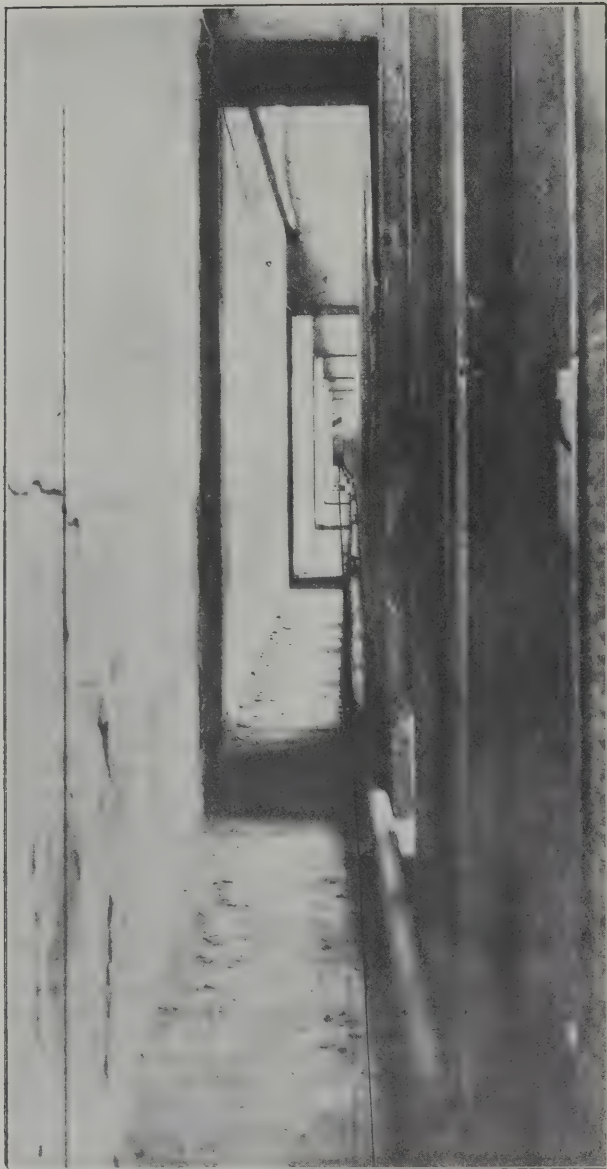


FIG. 1.

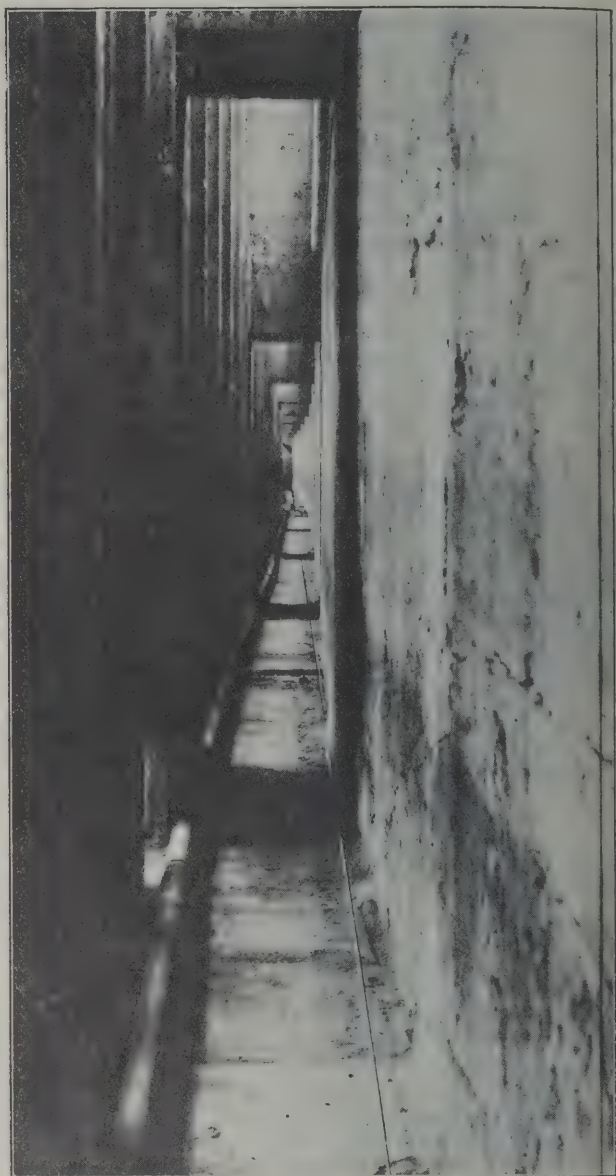


FIG. 2.

FIG. 1.—ST. OUVEN, ROUVEN. SOUTH TRIFORIUM, LOOKING WEST. FROM A BROOKLYN MUSEUM PHOTOGRAPH OF 1910. TAKEN WITH THE BACK OF THE CAMERA CLOSE TO THE SOUTH TRANSEPT ANGLE. THE ENTIRE CHURCH IS PLANNED ON A DOUBLE OR RETURN CURVE (ATTENUATED LETTER S, OR "HOGARTH'S LINE OF BEAUTY"). THE VIEW INCLUDES THE BEGINNING OF THE RETURN CURVE WHICH CONTINUES IN THE CHOIR. A CORD WAS STRETCHED ALONG THE FLOOR OF THE GALLERY IN ORDER TO SHOW THE CURVE AS CONTRASTED WITH A STRAIGHT LINE. THE LINE OF THIS CORD HAS BEEN STRENGTHENED BY A PEN IN THE PHOTOGRAPH. THE DEFLECTION OF THE CURVE BETWEEN THE FURTHER WEST END OF THE GALLERY AND THE LAST PIER OF THE NAVE (IN THE FOREGROUND OF THE PICTURE, WHERE THE FIRST SHADOW FALLS), IS 0.70 FEET, OR $8\frac{1}{2}$ INCHES. AN 8×10 INCH DISK MAY BE SEEN AT THE POINT OF GREATEST DEFLECTION. THE SHADOWS FALLING ON THE WALL AND ACROSS THE FLOOR OF THE GALLERY SHOW THE POSITIONS OF THE PIERS AND THE POINTS AT WHICH THE MEASUREMENTS WERE TAKEN BETWEEN THE STRETCHED CORD AND THE FACES OF THE PIERS. THESE MEASUREMENTS SHOW A GRADUAL AND SEQUENT CHANGE OF POSITION IN EACH PIER, THUS REPRESENTING A TRUE CURVE. THE VARIATION IN AMOUNT OF THE CURVE ON THE TWO SIDES OF THE CHURCH IS ONLY 0.13 FOOT, OR $1\frac{1}{2}$ INCHES. THE CURVE ON THE NORTH SIDE (FIG. 2) IS 0.83 FEET, COMPARED WITH 0.70 FEET ON THE SOUTH SIDE. THE MEASUREMENTS FOR THE CURVE ON THE SOUTH SIDE (FIG. 1), AS TAKEN ALONG THE STRETCHED CORD, AT EACH PIER, ARE AS FOLLOWS FROM EAST TO WEST (FROM THE FIRST SHADOW TO THE END OF THE LINE) IN DECIMALS OF A FOOT:—0.00 : 0.11 : 0.32 : 0.45 : 0.55 : 0.70 : 0.45 : 0.31 : 0.15 : 0.00.

THESE CURVES BEGIN AT THE FOUNDATIONS BUT ARE MOST EASILY SEEN AND PHOTOGRAPHED AND MOST CONVENIENTLY MEASURED IN THE GALLERIES. COMPARE FIG. 2 FOR THE NORTH TRIFORIUM. THE TWO SIDES OF THE CHURCH ARE PARALLEL.

FIG. 2.—ST. OUVEN, ROUVEN. NORTH TRIFORIUM, LOOKING WEST. FROM A BROOKLYN MUSEUM PHOTOGRAPH OF 1910. TAKEN WITH THE BACK OF THE CAMERA CLOSE TO THE NORTH TRANSEPT ANGLE. THE ENTIRE CHURCH IS PLANNED ON A DOUBLE OR RETURN CURVE (ATTENUATED LETTER S, OR "HOGARTH'S LINE OF BEAUTY"). THIS VIEW INCLUDES THE BEGINNING OF THE RETURN CURVE WHICH CONTINUES IN THE CHOIR. A CORD WAS STRETCHED ALONG THE FLOOR OF THE GALLERY IN ORDER TO SHOW THE CURVE AS CONTRASTED WITH A STRAIGHT LINE. THE LINE OF THIS CORD HAS BEEN STRENGTHENED WITH A PEN IN THE PHOTOGRAPH. THE DEFLECTION OF THE CURVE BETWEEN THE FURTHER WEST END OF THE GALLERY AND THE LAST PIER OF THE NAVE (IN THE FOREGROUND OF THE PICTURE, WHERE THE FIRST SHADOW FALLS) IS 0.83 FEET, OR 10 INCHES. AN 8×10 INCH DISK CAN BE SEEN AT THE POINT OF GREATEST DEFLECTION. THE SHADOWS FALLING ACROSS THE FLOOR OF THE GALLERY SHOW THE POSITIONS OF THE PIERS AND THE POINTS AT WHICH THE MEASUREMENTS WERE TAKEN, BETWEEN THE STRETCHED CORD AND THE CLERESTORY WALL. THEY SHOW A GRADUATED AND SEQUENT CHANGE OF LINE IN THE WALL AND THUS REPRESENT A TRUE CURVE. AS TAKEN FROM EAST TO WEST, FROM THE FIRST SHADOW IN THE FOREGROUND TO THE FURTHER EXTREMITY OF THE LINE, THESE MEASURES FOLLOW HERE, IN FOOT DECIMALS:—0.00 : 0.20 : 0.47 : 0.70 : 0.83 : 0.80 : 0.70 : 0.52 : 0.20 : 0.00.

THESE CURVES BEGIN AT THE FOUNDATIONS BUT ARE MOST EASILY SEEN AND PHOTOGRAPHED AND MOST CONVENIENTLY MEASURED IN THE GALLERIES. COMPARE FIG. 1 FOR THE SOUTH TRIFORIUM. THE TWO SIDES OF THE CHURCH ARE PARALLEL.

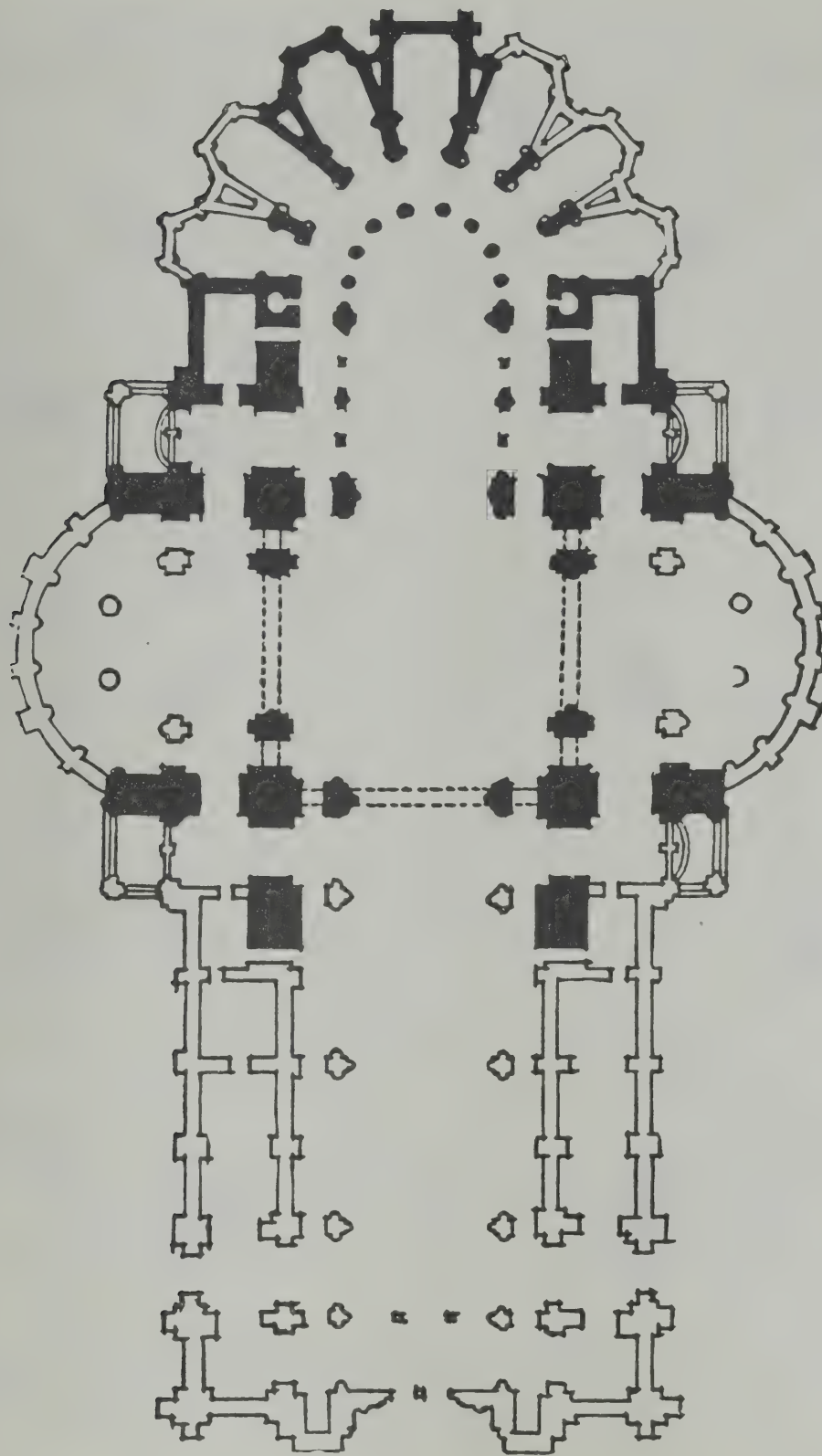


FIG. 3.—GROUND PLAN, CATHEDRAL OF ST. JOHN THE DIVINE, NEW YORK. MESSRS. HEINS & LAFARGE, ARCHITECTS. THE COMPLETED PART OF THE CATHEDRAL IS SHOWN BY THE BLACKENED PORTION OF THE PLAN.

the new Fifth Avenue Baptist Church had not been interrupted, first by the illness of the pastor and then by his subsequent acceptance of a new charge, it would have offered a second important example of such revival. Mr. Wm. Welles Bosworth had not only determined to introduce variations of alignment and dimension in the details of the façade of the new church, but actually made a trip to Italy for the express purpose of studying the Pisan Romanesque with this end in view. Provisions for such arrangements were also formally made in his draughts of specifications for contractors' work.

Not the least important part of Mr. Bosworth's relation to this matter is his extremely interesting baptism of the subject by a new name, viz., "temperamental architecture." This was simply the title of an illustration in an article

which he recently contributed to the *American Architect*,* and he made no further reference to that particular title in his text, but this term may be worthy of replacing the word "refinement" as a general title for the topic. No one who reads Mr. Heins' letters, as just quoted, can fail to realise the aptness of this term.

The term "temperamental architecture" appears also to be a sort of solvent (all the more effective because unintentional) of that very natural but very mistaken view about the mediæval builders; that because they were never anxious about having architecture straight or uniform, they were never distressed or disturbed when it was rigid, hard and

* September 21, 1910. *Some Observations on Architectural Dissymmetry.*

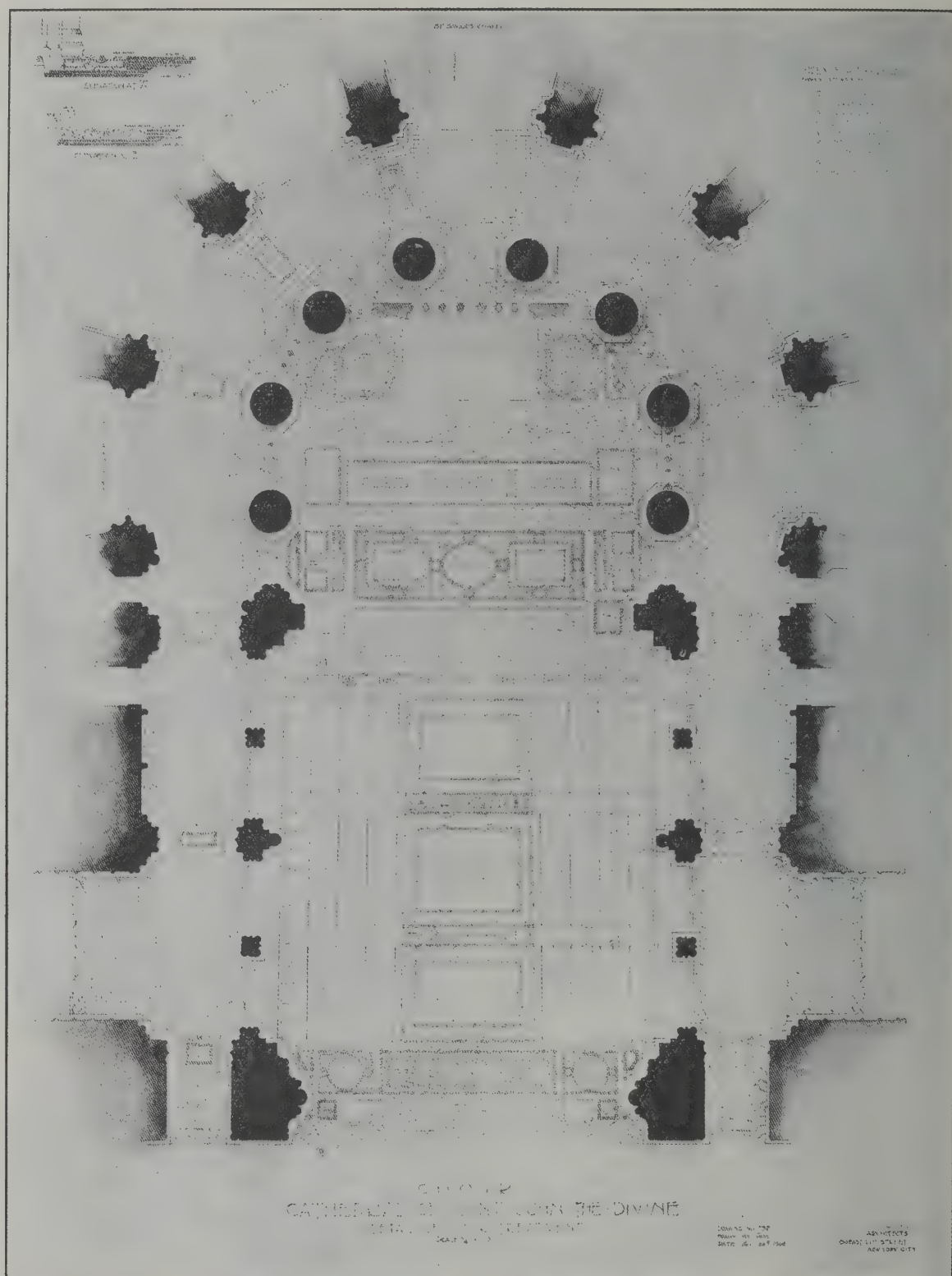


FIG. 4.

FIG. 4.—GROUND PLAN OF THE CHOIR, CATHEDRAL OF ST. JOHN THE DIVINE, NEW YORK. MESSRS. HEINS & LAFARGE, ARCHITECTS. SHOWING THE CONVERGING LINES OF THE PIERS, AS DESCRIBED IN TEXT. THE PLAN ALSO SHOWS THE ASYMMETRIES OF SPACING OF THE PIERS, AS MENTIONED IN TEXT, BUT THE REDUCTION OF SCALE MAKES IT DIFFICULT TO OBSERVE THEM, UNLESS A COMPASS IS USED.

dry. The general view has been that many mediæval builders were indifferent to geometrical uniformity or mathematical accuracy and therefore that no mediæval builder ever deliberately counteracted or avoided the effect of monotony or uniformity.

Men as far apart in time and as diverse in training and knowledge as John Ruskin and Auguste Choisy have both made the point that the mediæval unintended lack of regularity was an expression of the same spirit which at other times intentionally avoided regularity. However misleading and erratic Mr. Ruskin's artistic criticisms may have been in many particulars, his "Lamp of Life," in the "Seven Lamps of Architecture," struck the right note in this par-

ticular. Auguste Choisy, who was one of the soberest intellects and one of the greatest engineers of our period, has also recorded his opinion that mediæval irregularities are more frequently the result of calculation than of negligence—"il y eut plus souvent calcul que négligence," and he adds on a following page: "D'une manière générale les architectes du Moyen Age évitent la froide régularité."*

"Temperamental architecture" seems to be a term which covers both the doubtfully purposed and the definitely determined irregularities of mediæval practice. It affirms that the picturesque, when unconsciously produced, is equivalent,

* *Histoire de l'Architecture* vol. ii., pp. 410, 412.

in results, to its creation when consciously produced with deliberate intention. It indirectly affirms that a determination as to deliberate intention is comparatively unimportant and unessential.

If we adopt Mr. Bosworth's term "temperamental architecture" it may somewhat assist a determination as to what part "refinements" may play in modern architecture. The answer seems to be: Given a temperament of the kind which Mr. Heins himself stated that he possessed, and which Mr. LaFarge's "Scribner" article shows that he possesses, and which Mr. Bosworth's quoted article shows that he also possesses, and it may be confidently expected that similar temperaments will be much assisted in their own development, or self-assertion, by a wider knowledge of what the mediæval temperament tolerated, or deliberately did, as the case may be, and without any very anxious inquiry as to the cerebral process involved.

Especially in country-house architecture is there a favourable opportunity for temperamental planning, because the absence of anxiety as to symmetrical effects has long been general in this field. For instance, if the door and window openings be designed from the interior point of view and solely for interior convenience, the inevitable variations will be such that excellent results in the given direction will have been achieved.

Thus the results of an historical or antiquarian research as to constructive mediæval asymmetries, as determined by a more exact attention than they have previously received, ought to be favourably greeted by members of the architectural profession. It appears probable that the future of modern "temperamental architecture" will be largely determined by the success or failure (in public estimation) of this historic research. That this research may achieve general recognition, ultimately, is certainly suggested by the choir of St. John the Divine and by the published opinions of Mr. Heins and Mr. Bosworth, not to overlook those of Mr. C. Grant LaFarge as contained in his "Scribner" article, and these may also now be quoted:

Within the last few years a large number of careful measurements have been made of all sorts of mediæval buildings, and very suggestive theories been deduced therefrom; theories which have been hotly discussed on both sides of the water. There is no intention, as there is no space, here to add to the volume of the discussion or to decide whether the innumerable and sometimes startling irregularities in nearly all such work were mainly accidental or a conscious and calculated element of design. But we may well ask why it is reasonable to believe that men who knew enough to build masonry so complex that it would baffle the most skilful to-day to design; who discovered the most luminous principles of construction and applied them in the noblest manner; who left works of such transcendent beauty that the world ever since has been lost in admiration, should at the same time have been such feeble incompetents that they could not build straight? If they had rules, these are lost in the mist of time and probably we shall never know them, but is it not at least a tenable hypothesis that these giants of old worked in the great mass with the same sensitiveness that guided their detail; that they knew how to give the whole vast structure the personal charm of a successful sketch? Let us rest assured that they were no slaves of the T-square and the triangle fetich, nor of the *chic* drawing; no victims to the idiotic notion that straight lines and equal measurements possess any intrinsic superiority.

NOTES ON THE ILLUSTRATIONS FOR THE GALLERIES OF ST. OÜEN.

In spite of the wide fame of St. Oüen, there is no extant published plan of this church which does not show its lines as straight. How far its curves are otherwise generally overlooked may be best determined by the readers of this paper.

The convincing character of these photographs is due to the fact that they are taken in the triforium galleries, which are only about two feet wide, and that they therefore show the curves in duplicate in each gallery; in the clerestory wall on each side, as well as in the line of the parapet on each side, as determined by the positions of the piers.

As a contribution to the controversy which Mr. LaFarge has mentioned as a "hot discussion," but which, in spite of his modesty, may be considered as closed in many directions by his own participation in the revival of mediæval practice, these photographs have unique importance, because they appear to give a conclusive negative to the explanation of the mediæval deflections in plan which has been offered by Count Robert de Lasteyrie, by Mr. John Bilson, and by Mr. E. S. Prior.

It has been announced by these distinguished antiquarians that (aside from irregularities of site) such deflections are explained by the mediæval practice of screen-

ing off the completed portion of a church, for purposes of worship during the completion of the remainder of the church. (This practice is illustrated in modern times by the screen wall in St. John the Divine, which separates the completed crossing and choir from the unbuilt nave.) Then (it is said by these authorities), when the unfinished portion of the church was continued, the lack of scientific methods, and of scientific instruments of survey was the cause of involuntary and unintended deflections of plan.

When this theory is applied to St. Oüen and to the measurements which are quoted in the captions of the illustrations, it appears that this theory would call for eleven screen walls in the nave and for four screen walls in the choir, thus involving a manifestly impossible and absurd number of stops in the progress of building, aside from the manifest improbability that accidental deflections in plan would take the form of two parallel return curves on each side which are parallel on both sides of the church. This argument applies to the nave and clerestory, but it must also be remembered that the outer walls of the church follow the same curves, so that we are obliged to presume that six parallel return curves in plan are all due to defective methods of construction and planning.

The only other possible explanation, aside from that of an æsthetic purpose is that of symbolism. The argument of Count Robert de Lasteyrie against symbolism appears to be conclusive. See his publication "*La déviation de l'axe des églises est-elle symbolique?*" (Paris: Librairie C. Klincksieck. 1905.)

St. Oüen exhibits the widening refinement in straight lines. See the *American Architect*, March 16, 1910, plate 4, and Professor Charles S. Hastings, of Yale University, in the *Architectural Record* for August, 1909. The piers lean out in lines which are straight from the pavement up, to the amount of 5-5½ inches to a side in a height of about 80 feet. These inclinations are parallel and uniform, both in the nave and choir. The exterior buttresses have been determined as perpendicular (in 1910) by plumb line photographs (so far confined to the north side). A remarkable feature about the triforium photographs of the curves, and the related measurements, is that they indirectly illustrate the accuracy of the widening refinement, because the amounts of curvature in the alignment of piers only vary by 1½ inches on opposite sides of the church, at the great height of the triforium, although the piers themselves are inclined from 5 to 5½ inches in a height of about 80 feet.

ARCHITECT'S FEE DISPUTE.

A DISPUTE as to the payment of an architect's fees was concerned in the case of *White v. Mitchell* and others, which came before Mr. Justice Scrutton, sitting without a jury, on Saturday, May 20, in the King's Bench Division. The plaintiff, James White, of Winchester, claimed 100*l.* for rent of property used by defendant, Chas. Mitchell, architect and surveyor. Ventnor, which claim was said to be admitted, and his Lordship had to consider a counter-claim by Mr. Mitchell and his son for 75*l.* 12*s.* for work done in preparing plans for a building (which in the end was not erected) for Mr. White at Eastleigh, Southampton.

Mr. Mitchell said he had done a lot of work for Mr. White and his charge had never before been disputed. The work in this case involved the preparation of plans and several journeys to Eastleigh from Ventnor, while there was also considerable negotiations with the local authority. Mr. Mitchell said that if the buildings had been erected he was entitled to the usual scale of 5 per cent., but as they were not he claimed for payment on some sort of scale.

Mr. White said he was willing to pay Mr. Mitchell a fair sum, and he had been advised that a payment of 18 to 20 guineas would meet the case, as there was no understanding as to a scale.

Mr. Belfrage, of Belfrage & Saville, London, said that he thought 18 to 20 guineas would be fair. The Institute charge was 2½ per cent. if buildings were not erected, and for that there should be preparation of plans and specifications, negotiation with local authority, and the receiving of tenders. The Institute charges were not always (added witness) upheld by the courts.

His Lordship, in giving judgment, said that in his opinion the architect's scale of 2½ per cent. where buildings were not erected was unreasonable, and quite out of proportion to the scale charged for fees when buildings were carried through. He was not bound by the 2½ per cent., and he had decided to allow 46*l.* 1*s.* for Mr. Mitchell's work, making the

total on the counter-claim, with items admitted, 55*l.* 3*s.* 6*d.* He therefore entered a balanced judgment for Mr. White for 44*l.* 16*s.* 6*d.* and costs, this without prejudice to Mr. White's right to proceed for the recovery of outstanding sums amounting to 30*l.* which his Lordship did not adjudicate upon.

OUR CONTEMPORARIES FROM OVERSEAS.

THE *American Architect* (New York) has illustrated recent work by Messrs. McKim, Mead & White, Messrs. Rankin, Kellogg & Crane, Messrs. Newhall & Blevins, and Messrs. Hewitt & Brown. Messrs. McKim, Mead & White's work is the Downtown Building of the Knickerbocker Trust Company, New York, whilst Messrs. Rankin, Kellogg & Crane are represented by their State Asylum for the Chronic Insane, Wernersville, Pa. Several examples of work by students of the Society of Beaux-Arts Architects are illustrated, and a competition design by Mr. Louis Boynton for the Confederate Memorial at Richmond, Va.

Der Architekt (Vienna) contains the first and second prize designs in the competition for a new Kurhaus at Carlsbad, the first by Professor Dr. Friedrich von Thiersch, and the second by Professor Emanuel von Seidl. There are also some rather weird "new-art" designs for a painted façade of a town house, or rather block of flats, at Pressburg, and a hotel façade at Aspang. One of Mr. W. H. Bidlake's country houses looks very refreshing after these.

Arkitektur og Dekorativ Kunst (Christiania) has an article on the architecture of Foreign Garden Cities, with illustrations from Hampstead, England, and Hellerau, Germany. There is also a description of the evidences of old roof constructive lines, as shown on the central tower of Trondhjem Cathedral, which is of antiquarian interest.

Arquitectura (Barcelona), in the April number, which has just reached us, includes the design for the Palace of Justice at San Sebastian, by Don Julian de Saenz Iturralde, submitted in competition. There are also a number of designs for churches in Russia, by A. Djorogoff, A. von Hoen, N. Vassieljeff, and V. Pokrovsky.

La Construction Moderne (Paris) illustrates a design by Mons. Sainte-Anne Louzier for the enlargement and restoration of the cathedral at Toulouse.

Stone (New York) has a special Building Stone number, which contains excellent photographic illustrations of the central doorway of St. Bartholomew's Church, New York, a new post office at Warren, Ohio, the Denkmann Memorial Library, Rock Island, Ill., the rood screen in St. Luke's Episcopal Church, Evanston, Ill., the entrance of the New Grand Central Palace, New York, a detail from the tomb of Andrea Vendramini, Venice, the central porch of Amiens Cathedral. Several examples of the failure of concrete construction are given, of which the most important is the tower of the new Harper memorial at the University of Chicago.

ILLUSTRATIONS.

CATHEDRAL SERIES.—ELY.—FAST END OF CHURCH AND LADY CHAPEL, WEST DOORWAY AND PART OF GALILEE PORCH.

WE continue this week our supplementary series of photographs from Ely, which will be followed by others in the near future.

COMPETITION DESIGN FOR COVENTRY MUNICIPAL BUILDINGS.

THIS design, by Mr. Arnold Seaward Tayler, A.R.I.B.A., shows a symmetrical plan, having a central principal entrance at the ground floor level, with a wide corridor running east and west, and lighted at each end; the street angles are bisected and on the axial lines the side staircases are formed of regular-sided shapes on plan. The rooms at the angles are regular octagons.

The Lower Ground Floor accommodates the Rates department, which is in close proximity to the side entrance in St. Mary Street. The Weights and Measures department is also accommodated on this lower floor. The Ground Floor accommodates four departments, each adjoining and complete in itself, viz. the Town Clerk's, the Gas department, the Electric Light department, and the Treasurer's. The staircase by the main entrance is intended only for the use of Councillors, and gives direct access to the Council Chamber, Committee-rooms, &c., and does not go to the second floor nor

basement. The side staircases are intended for reaching the other floors, and for inter-communication. The approach to the public gallery of the Council Chamber is by a minor staircase direct from street level. The First Floor accommodates the Engineer's and Education departments, as well as the Council Chamber, Committee-rooms, &c. The Council Chamber is placed at the rear for the sake of quietness. The Second Floor accommodates the secondary rooms of the Engineer's department, together with the Waterworks department. The Medical Officer's department is placed at the eastern end. The central part of this floor is taken up by the upper parts of the Council Chamber and two Committee-rooms, as well as the public gallery in the former.

The general offices of each department (to which the public require access) are situated as near the entrances or the landing of stairs as possible, so as to avoid trouble in locating the departmental enquiry offices. Most of the rooms are connected by pass-doors. The staircase corridors are wide and well-lighted from the ends by street windows, by the staircase window at the centre, and also by the large lightwells to the side staircases. Lavatory accommodation is provided on every floor (except the basement) at the ends of the side corridors.

In designing the buildings the author considered that the mediæval associations of Coventry required a Gothic rather than a Renaissance or Classic treatment, which would break away from the historical buildings and traditions of the city. The offices were planned independent of the Town Hall, so that one could be built without the other. The elevations generally would be of stone backed with brickwork, with the faces below plinth left untooled with mason's joint, the upper part tooled with flush joint. The back elevations to be in brickwork, with stone dressings, and the roof covered with Cumberland green slating.

The Town Hall buildings were planned with the main entrance in Bayley Lane giving access to the ante and reception rooms. The Hall would easily seat 1,073 persons on the Ground Floor and 288 persons in the Gallery. The latter takes up three sides of the Hall, and has two approach staircases as well as two emergency exits. Generally, the whole building would be built in a similar manner and with similar materials as used in the Municipal Offices.

SIR ASTON WEBB, C.B., R.A., who completed his sixty-second year on Monday last, has been appointed Commander of the Victorian Order. The same *London Gazette* announced the appointment of Sir Thomas Brock, R.A., to be an ordinary member of the Civil Division of the Second Class of Knights Commanders.

THE Establishment Committee of the London County Council reported on Tuesday that they were now in a position to ask the Council to agree to tenders being obtained for the construction of the substructure for the new county hall. Being strongly of opinion that the tenders for this work should be invited from selected firms, they suggested that the Council should authorise them to approve the list of firms to be invited. As it was inexpedient at present to publish the amount of the estimate of the cost of the work in question, they proposed that the necessary estimate should be submitted at the same time as the tenders were considered by the Council.

MR. W. D. CAROE, M.A., F.S.A., has prepared plans for the renovation of the twelfth century church at Branscombe, Devon. Immediate steps must be taken to preserve the fabric; the walls are cracked and need to be underpinned and repaired; the roof beams must be renewed; there is at present no vestry, and the "box" pews are rotten and uncomfortable. Accommodation will be provided for 208 persons. The estimated cost is 2,000*l.*

MR. JOHN DOUGLAS, architect, Chester, died on Tuesday last, in his eighty-first year. Mr. Douglas served his articles in Lancaster and set up in independent practice at the age of twenty-five in Chester. His firm afterwards became known as Messrs. Douglas & Fordham and later as Messrs. Douglas & Minshall. The amount of work carried out was both considerable and important in Cheshire and North Wales. Among the churches he designed are those of Colwyd Bay; Christ Church, Chester; St. Peter's, West Kirby; Christ Church, Brynmawr; Congregational Church, Hoylake; Over, Altcar; St. Paul's, Houghton, Cheshire; Deganwy, Shotton, Buckley, Helsby, and he also supervised the restoration of Hawarden Church. Other recent work included the Gladstone Memorial Library, Hawarden; Delamere Cottage Sandiway; "Clare Lodge," Abbot's Park, Chester; "Oak mere," Cheshire; cottages at Port Sunlight; "Eccleston Hill Lodge," Eaton Estate; and "Abbeystead," Lancs.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A GENERAL meeting of the Royal Institute was held at Conduit Street on Monday, May 22, Mr. Reginald T. Blomfield, A.R.A. (Vice-President), in the chair. The Secretary announced the introduction of certain corrections to the minutes of the annual general meeting held on May 1. After some slight discussion and amendments these were confirmed unanimously. The decease of Mr. William C. Poole, Associate, elected 1863, was announced. The names of the six candidates who have been nominated by the Council for Fellowship, nine for Associateship and 161 for Licentiate-ship have already been published in the official Journal.

Mr. R. ANNING BELL then read a short illustrated paper of which the following is an abstract) on

Painted Relief.

Painting applied to relief-work is one of the most obvious and ordinary forms of decoration; but very little work of a good class has been done in recent times. The architect, the sculptor, and the painter have specialised each in his own art in these later centuries, and have lost that comprehension of and sympathy with each other's work which characterised them in earlier and happier times. A reaction is undoubtedly setting in against the over-appreciation of work both in sculpture and in painting which aims only, or at any rate mainly, at giving the illusion of natural effects.

The education of our art-students is now beginning to be directed by a wider and saner policy, and soon it will be difficult to find any student who will look with blank indifference and even contempt on any art other than that which he is studying. The architect, owing to the difficulty of finding colleagues with whom he can work harmoniously, has been driven to confine his efforts in the direction of colour to such simple treatments as he can trust to the ordinary artisan. These irritating limitations make him feel disinclined to undertake more than a general supervision of the colour decoration of his building, and so he entrusts the work to one of the firms of decorators who are always at his elbow and who can be trusted to turn out a not unpleasant if not very original piece of work. These great firms have taken the place of the painter and the sculptor in the older system. Designers and craftsmen of great ability are employed by them; but the great objection to them is that they undertake too much for one man to control, and therefore lose the distinction given by a dominating and directing artistic personality.

The little work which has been done in modern times is not sufficient to show how wide is its range and how varied are the effects to be obtained by it. Speaking of figure-work in relief, gilded or silvered and painted, and executed in fibrous plaster or some form of biscuit or terra-cotta, the lecturer said the work is modelled in clay, then cast in plaster, which is then gilded and painted, or a mould is made from which the biscuit or terra-cotta is cast: this is then fired, and subsequently also gilded and painted.

The work is essentially a colourist's work, and the first sketch must be as definite and careful as one for stained glass. The modelling gives the resulting work a carrying power much greater than painting alone can do, and it must be so treated as to leave a distinct edge to each colour-shape if the colours are strong; this particularly applies to areas which are to be covered with gold or silver. The relief need not be high; but it may be so strong that the cast shadows from the layer forms have a prominent share in the composition. When high up, a broad treatment with simple flat planes, with but little modelling properly so-called, may be used with good effect. Most workers will agree that the modelling takes up much more time than the colouring, though the latter is the dominant factor in a successful result. Painted relief-work may be fanciful and gay, and it may be severe and sober and dignified. Opportunities for work of the latter kind have not been frequent, so that its powers in that direction have been by no means completely demonstrated. But its possibilities for serious and architectonic decorative effect in churches or public buildings are as great as those to be obtained from any other method of wall-decoration. It has, too, the advantage of costing less than many, and, if desired, by repeating the modelled work and varying the colour treatment a very inexpensive result is obtainable. With proper treatment it should prove very durable; the plaster surface can be hardened, or, still better, the whole may be fired in "biscuit." This is extremely hard, and gives quite a good surface for the colour. As to the colouring matter, Mr. Bell said he always employed gold or platinum and the usual artists'-colourman's oil-paints, and there

seems to be no reason why these should not prove as durable on plaster modelled as on the grounds akin to plaster which are used applied to canvas for the ordinary easel-picture.

It is rather necessary to dwell on and to emphasise the potentialities of this material for grave and rich and distinguished decorative treatment, as considerable doubt seems to be felt as to whether this method is capable of being used with satisfactory results in any but work designed in the lighter vein.

This is an unfortunate and false impression: deep and rich and even sombre effects of colour may be obtained; personally, he rather preferred the effect of a low-toned scheme—a sort of subdued gorgeousness which rich colour laid over gold so naturally gives, and when associated with a good deal of black. In this way extremely noble and splendid and restful effects may be achieved by a man who is a real colourist, effects which will be, in the words the late Mr. Brydon used, "very broad, very simple, very stately, very strong in lines, not at all naturalesque, and not at all confused or jumbled up." Very little work has, as yet, been done, very few experiments made, and very few artists have had the opportunity of testing their powers. It lies largely with the architects to give those opportunities for the greater encouragement of an art capable of very great and beautiful developments, an art which is worthy of the brains and hands of the greatest artists. Capable executants can be found to-day besides those few who have as yet practised the combination of form and colour; and as time goes on many young artists will arise who are quite capable of working with a true "architectural" understanding of the relation of their share of the work to the whole, and who, as colourists and as modellers will act as true colleagues and assistants to the architect.

Mr. WALTER CRANE, in proposing the vote of thanks, said he remembered that when he was working with Mr. Anning Bell arranging the British Section of the Exhibition in Turin the Italian papers talked of him as "the English Della Robbia." He was glad that Mr. Bell had alluded to the difficulties arising out of different artists working together, for there lay one of the great obstacles to public work. It is rare indeed that the sculptor harmonises with the architect, and *vice versa*. However, it is impossible to alter the economic conditions which have brought this state of things about, and it only remains for us to make the best of things. The slides shown on the screen suggested how much the ordinary photograph falsifies the relation of colour. Allusion had been made to the difficulties under which decorative artists now labour. It was very true that now many clever people were employed by firms who undertake to do everything in the way of decoration in the course of a few months and at a fixed price. There used to be people who had the courage to ask artists to do things such as had been illustrated on the screen that night. Decorative artists were thrown utterly for their future prospects on to the architects. It was only chances and opportunities which the modern artists required to achieve worthy work. The reason that public monuments are not successful in this country is that (apart from the lack of public appreciation) the public are not ready for them. The public do not regard them with the seriousness they should as the expression of national feeling.

Mr. GERALD MOIRA said that Mr. Bell had given them practically everything there was to be said about coloured relief, and incidentally he had heard a great deal more than he had ever known before. He was rather sorry to hear Mr. Bell say how a very charming and very cheap effect might be arrived at. His experience of coloured relief in figure work was that its principal feature was the flatness of modelling. It seemed to require an entirely different treatment from the bas-relief. The painter who works with the sculptor has likewise to treat it from a standpoint different to the usual.

Mr. F. LYNN JENKINS said that ten years had elapsed since on a similar occasion he read before the Royal Institute a short paper on the subject under discussion. He was then fired with ambition to secure from architects such an amount of practical appreciation of coloured relief decoration as would tend to make it one of the most vital branches of decorative art. He had dreams of a London made gayer with notes of harmonious colour to enhance the dignity of its eternal greyness. Those youthful hopes have been crushed under the iron heel of grim realisation. Perhaps, too, with advancing years he had become like the architects whose sympathies he sought to enlist—reticent in the matter of colour as applied to sculpture. This must be so, for on several occasions recently he had actually been referred to as

a sculptor, whereas formerly he was invariably termed a decorative sculptor. None the less, he still had deep down the shameful conviction that colour could be used legitimately and with great enhancement of effect in sculpture decoration, that it is a dignified form of decoration—possessing qualities and values unattainable by other means. Mr. Anning Bell, however, never faltered in his convictions, and has steadily gone on producing those wholehearted, individual, and distinguished works which will ever be associated with his name. He is quite right in affirming that coloured relief is a distinct art, in which the relation of colour and form must be that of lawful wedding, each taking its proper part in the production of a perfect result. This demands a singleness of purpose rarely to be found in collaboration; and there are few painters who, like Mr. Anning Bell, possess the ability to realise the full expression of their conceptions in both arts—modelling and painting. Perhaps this scarcity of accomplished artists in coloured relief work has been one of the factors against its wider use, following the law of supply creating demand. The fact remains that there has been no appreciable increase in demand during the past ten years, rather a decrease if anything. It would be interesting to hear some of the chief objections to this form of art, for strong objections, it is patent, there must be. None who spent any time seriously studying the wonderful collection of Japanese art last year at Shepherd's Bush could fail to be moved with wonder and respect for the masterly handling of colour as applied in flat tones, brilliant or delicate, to broken surfaces. And where these great decorative artists show such a lead surely we can without any loss of national or other characteristics follow in their footsteps. It has been stated that a lurking fear as to its permanence prevents architects from adopting colour relief in their decorative schemes. It is difficult to see why this fear should exist; properly treated, even plaster will stand the test of ages, and the process of colouring, as adopted by Professor Moira, for one, adds enormously to its assistance. There are occasionally opportunities when money does not so largely enter into consideration, and in such cases absolute permanency can be obtained by using bronze of various patinas, marble, ivory, mother-of-pearl and gold and silver to produce a harmony of brilliant but dignified colour. Surely, such materials would lend themselves most admirably for the decoration of sanctuaries, reredoses, &c. Yet they are seldom, if ever, employed. The chief apparent objection to coloured relief decoration has been its degradation in the hands of philistines, who have used it without any sense of fitness or taste either in execution or motive. These instances are to be deplored, as they militate against the serious consideration of its use by serious architects.

Mr. J. D. CRACE spoke of the importance of the surrounding spaces in the introduction of coloured relief. There was always some risk in the separate mention of any particular method of decoration, for architects were apt to think they were decorating a building when they put in a certain number of square feet of decorative treatment. Whereas in reality a mere island of decoration makes the building suffer as the architectural lines are lost in the attention paid to the treatment of that coloured island. There was one drawback to the use of biscuit for internal decoration, viz. in its weight; it was very much heavier than terra-cotta. As for durability, plaster will last as long as the building. This was exemplified in the work at Hardwick Hall, which has lasted three hundred years. In Spain there was a very interesting coloured wood relief executed in the fifteenth and sixteenth centuries. A most important remark in Mr. Bell's paper was that in which he contended that the success of coloured relief largely depended upon the modeller and the colourist being at one.

Mr. MAURICE B. ADAMS said he had been struck when visiting Hardwick Hall by the plaster or stucco decorations in the incomplete house standing in front of that building, and which were of a similar character to those in the big hall. Though they had been exposed to the atmosphere for three hundred years they were still in good condition. Stucco was, in fact, one of the most durable materials. Reference had been made to the objection some architects feel to this kind of work. There was some reason for this. When last at St. Albans Abbey he was horrified by the reredos or dorsal executed by Alfred Gilbert. The whole thing seemed to him to be utterly incongruous with that building. In a modern church it might have fitted with its framework. It illustrates what might have been a beautiful thing in itself judged apart from its position; but which is now an example of incongruity.

Mr. H. H. STATHAM said that Mr. Bell's paper had taken him mind back to the time when small reliefs by him began to appear in exhibitions, and people said to themselves, "Why, here is a new form of architectural decoration!" Now Mr. Bell showed pictures, and to these one went to find colour. No reference had been made to the Parthenon frieze. There could be no reasonable doubt that that was coloured. That was one reason why it was done in low relief for colour applied to high relief makes it too realistic.

Mr. R. T. BLOMFIELD, A.R.A., closed the discussion. Painters, he said, had laid the burden of the future on architects. Mr. Walter Crane was quite right in saying the architects were the hope of the future for decorative artists. If sculptors and painters were to have a chance they must look to architects. But the former must recognise that architects are artists too, and have an art of their own to serve. They did not seem to make a full allowance for the difficulties architects have to contend with. Mr. Bell had not dealt with the historical side of his subject. It was not known how far the Greeks used decoration in colour of their buildings. The evidence is that they used it in distinct subordination to the architecture. The same rule was followed in mediæval work of the best periods. It seemed as if Mr. Bell would advocate something more than that. He went further than that in not using his colour in subordination to the sculpture. In the relation of decorative art to architecture, it seemed as if it was about time they paused in their headlong career, and asked themselves how far they were going. Unless they were careful they might be rushing to disaster.

Mr. R. ANNING BELL, in reply, said he had wished to make it clear that the work of painting in relief should be subordinate to the architect's. Small pieces might be made elaborate and subtle; but for big surfaces only simple and strong work was desirable. The Parthenon frieze was undoubtedly designed for colour. The people of that period could appreciate colour and relief at the same time, whereas the people of the present day muddle them up.

The next meeting on June 12 will be a business meeting when the results of the annual elections to the Council and Standing Committees will be announced. An ordinary meeting will follow, when a paper on "Building in Egypt" will be read by Mr. Ernest Richmond.

PROTECTION OF CONSTRUCTIONAL IRON AND STEEL.*

THE pre-eminent position occupied by iron and steel in materials of construction is known to everyone. We know, too, is the unfortunate tendency of iron and steel to oxidise and rust in the air under ordinary atmospheric conditions. Hence the question of protecting the metals from deterioration through surface oxidation is one which is constantly engaging the attention of engineers and architect, as well as all persons who are owners of or are interested in property.

Apart from the artistic or sentimental point of view which demands that the unsightly appearance of ironwork in process of rusting or corroding shall be reduced to a minimum by suitable protective treatment, there are two fundamental considerations which underlie the recently-awakened interest in our subject. One is the fear lest the strength of iron and steel structures should become reduced owing to corrosion and consequent deterioration, especially in places not readily, at all, visible. The other is the feeling, more philosophic and perhaps more modern than the first, namely, that the conservation of national resources, in particular coal, without which iron and steel cannot be produced, demands that products and structures which depend for their existence on these national resources shall be maintained for as long a time as in as high a state of efficiency as possible in order to guard against reckless waste of nature's stores. This aspect of the question, although it can hardly be said to have yet commanded wide public attention in Britain, is already being seriously considered in America, and Professor Ira Remson, in his presidential address to the Society of Chemical Industry in 1910 was in effect a sermon based on this text.

That iron and steel corrode and that they do so with the greatest ease under the most ordinary circumstances will therefore, be readily admitted, and it will be granted further that all improvements in the efficiency of the methods employed to prevent or retard corrosion are matters of public

* A paper read by Mr. J. Cruickshank Smith, B.Sc., F.C.S. M.S.O., in opening a discussion at the first International Chemical Engineering and Industries Exhibition, on May 18.

economic interest. My mandate to-night is not to discuss the question of corrosion in regard either to the mechanism of its action or to its results, although that subject is intensely interesting and important. It is a most wholesome sign that the volume of scientific research which has been during the past five years and is at the present time being brought to bear on the problems connected with corrosion of iron and steel is very great, and a further satisfactory feature is that the men who are making the subject their own are connected with a variety of departments of scientific activity, and number among them not only pure chemists, but also electro-chemical experts, metallurgists, mechanical engineers, and technical manufacturers of protective coatings. Who can doubt that when the citadel has been shelled from so many quarters the position will at last be stormed, and the question of protecting structural iron and steel will at last be placed on a strictly scientific footing? Hours, days even, might be devoted to reviewing, criticising, or repeating the researches of Grace, Calvert, Moody, Crum Brown, Traube, Cushman, Walker, Friend, Agmuir, and Cobb. We might discuss *ad nauseam* the question whether moisture or oxygen or carbon dioxide or hydrogen peroxide or nascent hydrogen or electrolytic action is the fundamental and initial producing cause of corrosion of iron and steel, but in the end, and from the point of view now best to protect the surface of structural iron and steel from corrosion, we may, I think, from the mass of matter at disposal, extract a few broad generalities:—

(1) Deductions drawn from experiments with pure iron and pure reagents, including chemically pure water, are not relevant to ordinary industrial corrosion, in which neither metal nor the exciting conditions (air and water) are chemically pure.

(2) Electrolytic action between individual particles or aggregates of particles of the metal accelerates and may even initiate corrosion.

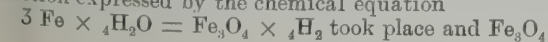
(3) Many experiments and deductions concerning the action of certain chemicals in retarding or preventing the electrolytic action are not relevant to the problem of protecting the surface of iron and steel from corrosion, inasmuch as in the experiments referred to such chemicals are frequently brought in contact with the metal in the form of solutions completely surrounding the surface, a condition which is, of course, inapplicable to structures.

(4) Complete and permanent exclusion of moisture from metal prevents corrosion.

This latter generality (4) is the one which must, I think, be present before being accepted as the fundamental axiom governing external protection of iron and steel. If the time should ever come when by applying to the metallic surface a solution or preparation containing ingredients which can be absolutely relied upon to inhibit any tendency to rusting in the underlying metal, even in presence of moisture, then a new epoch will have been opened up in the protection of structural iron and steel on the commercial scale. But that time is not yet. One must not say it will never be. Already it has been found that the "influence of small quantities" of the composition of iron and steel is a factor of no mean importance in connection with liability to corrosion. The introduction of small proportions of nickel, vanadium, niobium, chromium, and tungsten exercises considerable influence on the liability of the metal to corrode. The practical difficulty will probably be to maintain the necessary mechanical properties of the metal in presence of these expensive additions. The question of cost may also be unsurmountable. Hence at the present time and in the present condition of our knowledge the statement can be made with assurance that, given an iron or steel surface free from moisture (and this is a condition that does not always obtain in practice), that surface can be protected against corrosion so long as there adheres to it a suitably prepared coating which is free from and impervious to moisture.

We may now take a brief survey of the usual methods whereby structural iron and steel are protected from external corrosion.

(1) It is well known that the "mill scale," consisting of magnetic oxide of iron (Fe_3O_4) which is formed on the surface of wrought iron, provides a very effective protective coat so long as it adheres to the metal. Quite an old process for the protection of iron plates was that of Barff, which consisted in depositing on the surface of the metal a film of magnetic oxide. The plates were placed in a muffle furnace and heated to from 400° to 600° C., and were then subjected to the action of superheated steam for five to ten hours. The reaction expressed by the chemical equation



was formed on the surface of the iron. Bower's process consisted in heating the plates in a retort to which air and carbon dioxide were admitted under carefully regulated conditions. The ferric oxide produced by the action of the air was reduced to Fe_3O_4 by the carbon dioxide.

The objections to these processes were (1) their cost and (2) the tendency of the film of magnetic oxide to crack and scale if the plates were hammered or bent. This, indeed, may be said to be the weak point in connection with all metallic films as protective coatings. Nevertheless, the processes are interesting historically, inasmuch as to them is due in all probability the entirely exaggerated value which engineers and others have attached to magnetic oxide of iron in the form of paint as a protective material. It is true that some of the original "iron earth," as it was called, and which consisted largely of magnetic oxide of iron, was found to possess considerable permanence and to resist the action of acids in the atmosphere. But the mechanical aspect of paint grinding was not understood in those days, and it was not appreciated that although some samples of the pigment produced an excellent paint, others proved very indifferent in this respect. Hence it has come to be recognised that any virtue possessed by a protective paint made from magnetic oxide of iron is due not so much to the composition of the pigment, but rather to certain physical properties of the paint which are by no means attributable solely to oxide of iron.

(2) *By Films of Other Metals.*—The processes known as tinplating, galvanising, and sherardising are familiar examples of these methods, although the first of these can hardly be said to be applicable to structural iron. The various galvanising processes now in use are much in advance of the old methods. The Cowper-Coles process of electro-zincing and the more recent processes of Sherard, in which the iron plates are brought in contact under suitable conditions with zinc vapour, have rendered possible the utilisation of zinc as a protective coating for iron. Thus "zinc-flashing," i.e., the deposition of about 1 oz. of zinc per square foot of steel, has been adopted as a fairly satisfactory method of protecting ship plates and other pieces of iron and steel until the surface can be painted after erection. No one alleges, however, that zinc plating can be regarded as a permanent mode of treatment, subsequent painting being always necessary. Frequently too long an interval elapses before the painting is carried out, and corrosive action is set up between the iron and zinc. It is found in practice that zinc coatings rapidly become porous, and that the degree of porosity varies greatly. If real and permanent protection be desired, therefore, zinc or galvanising can only be regarded as a temporary expedient, and cannot be accepted as a substitute for painting. Zinc plates, before being painted, should be treated with a solution containing copper, in order to prevent the paint from peeling off.

Nickeling, silvering, and in general the application of films of the more expensive metals to steel for the purpose of protection, are methods which find favour for certain special and more or less restricted purposes.

Quite recently a process known as the Simpson process has been adopted in the protection of ship and armour plates. Tubes and wires can also be treated by it. In the case of ship steel the copper is deposited electrically. The plate is then baked in a mixture of carbon and sugar, and an inter-molecular absorption of copper and steel takes place on the surface. Great anti-corrosive properties are claimed for Simpson plates, but time alone will show whether the results fulfil expectations.

(3) *By Protective Coatings of Paint.*—When all has been said regarding other modes of protecting structural iron and steel, the fact remains that the method whereby successive coats of suitably prepared anti-corrosive and protective paints are applied to the metal is by far the most widely adopted, efficient, and economical. This does not imply that all so-called anti-corrosive and protective paints are either retarders of corrosion or efficient protectors against outside influences, or even that paint manufacturers have in all cases kept fully abreast of modern developments and research in the domain of protective coatings. The point I wish to make is that the mechanical, civil, electrical, or chemical engineer is not only not independent of but is largely in the hands of the maker of protective paints. Provided that the paint maker is a specialist in his subject, and is keenly on the alert to assimilate all that can be learned from the persistent and accumulated labour of chemists, metallurgists, and engineers on the subject of corrosion, there is nothing in this condition of affairs which need cause uneasiness any more than a railway company or a mercantile concern or a nation need feel

disquieted lest the engineers employed by them to construct railway bridges or factories or battleships do not possess the necessary qualifications for their work.

It is due to the paint manufacturer to say that both in Britain and America for the last ten years unremitting efforts have been made by the leading representatives of that industry to keep themselves abreast of every development and discovery which might assist them in offering improved products.

The subject of fine grinding has been reduced to a science, and one has only to look at the nature of the plant in a modern paint factory to appreciate the extent to which the manufacturer has taken advantage of the skill and experience of the engineer.

Again, in the choice of raw pigmentary material, the paint manufacturer has brought much expert knowledge to bear. The nature, composition, and physical properties of each pigment have been inquired into, and there has been established the important law that the durability and protective properties of a paint depend largely on the physical structure of its component parts, and on that of the film resulting from the application of the finished paint.

He has discovered that a blend of pigments is, as a rule, more serviceable for protective purposes than one single pigment, and that a pigment may be what is popularly known as pure without gaining in practical efficiency. He has elaborated new processes for the heating and compounding of paint vehicles, and has learned how to adjust the proportions of oil, hard resin, volatile solvent, and drier in such a manner as to yield the best results under known conditions.

He is keenly desirous of learning all he can from engineers and architects as to the nature of the various surfaces to be treated, and the conditions to which they will be exposed, because he feels that without this information he is like the physician who is called upon to prescribe for a patient without having made a diagnosis of the case.

It is for reasons such as these that the Paint and Varnish Society has come to the Exhibition of Chemical Engineering, and has invited the presence of engineers and architects, hoping to awaken interest and stimulate useful discussion in the highly complex subject with the mere fringe of which we can hope to deal to-night. With this object in view I shall enumerate a few of what may be termed fundamental axioms in connection with the preparation and application of protective paints for iron and steel.

As to the paint:—

1. The particles of the pigment should be reduced to the smallest possible size, and should be packed as closely as possible in the paint film.
2. There should be absolute perfection in the incorporation of the vehicle with the pigment.
3. The pigment and the vehicle should be properly proportioned, it being always borne in mind that the pigment is the real protective agent, while the vehicle binds the pigment, enabling it to be spread uniformly over the surface, and to resist the action of the atmosphere and moisture.
4. Volatile constituents should be reduced to a minimum.
5. Moisture should be absent from the paint, as also should be materials capable of yielding water as a product of partial decomposition.
6. Acid and materials capable of giving rise to acid should be absent.
7. The first, a priming coat, is of great importance, and should partake of the nature of a filler. In this coat both the pigment and the vehicle should be most carefully selected, as on it most of the efficiency of the succeeding coats will depend.

As to the surface:—

1. The surface should be perfectly clean and free from moisture, rust, mill-scale, and grease.
2. Not only should all ordinary surfaces be painted, but special attention should be given to bolts, rivets, nuts, ends of plates, and girders, and all flanges or angles which are to be bolted together in order that the paints may form an insulating coating. The condition of "metal-to-metal" will certainly induce corrosion.

As to the film:—

1. The drying of the film should proceed uniformly throughout the whole depth of the film.
2. Change in volume during and after drying should be reduced to a minimum.
3. The film will form an efficient protector in strict relation to the time during which it is impervious to moisture.

Brief reference must be made to one of the most recent

developments in connection with scientific paint-making, namely, the use of "inhibitive pigments." This term has arisen out of researches (chiefly those of Cushman and Walker) on the electrolytic theory of corrosion, and it has been sought to prove that pigments can be grouped in classes according as they tend to prevent or inhibit corrosion, accelerate corrosion, or are inert in this respect.

It is well to point out that certain conclusions are arrived at in respect of such recognised inhibitors as potassium bichromate, chromic acid, and caustic soda are not relevant to the problems attending the protection of iron and steel by means of oil paints, for the reasons that none of these chemicals are or can be constituents of such paints, and that they act only in watery solution, and the presence of moisture must be rigorously guarded against in paint. A further difficulty has been introduced through Friend having shown in his recent researches, that the effect of an inhibitor depends on the concentration of the solution, and that as the concentration varies the action may be reversed, the inhibitor becoming an accelerator of corrosion.

The study of pigments (using that term in its strict technical sense which connotes insolubility) in relation to their effect as inhibitors of corrosion has not so far been sufficiently exhaustive or long continued to permit of entirely satisfactory deductions being drawn. While it is unsafe, therefore, at present to claim very definitely for any pigment under the conditions to which it is exposed in a paint film on iron or steel, unfailing action, as an inhibitor of corrosion, or even to assert with any degree of certainty what pigments will be uniformly inert in this respect, signs are not wanting that we can with a growing degree of confidence point to certain pigments which act as accelerators of corrosion, and these should be rigidly excluded from protective coatings.

Sweeping generalities are therefore to be deprecated unless our exact knowledge based on experimentation conducted under service conditions is greater than it is at present. Thus, for example, the statement that carbon is an accelerator of corrosion, and must never find a place in protective coatings, appears to savour of rashness. Carbon, in its true form in the simple pigmentary form, is strongly electro-negative to iron, and under suitable conditions promotes corrosion of the latter. But whether carbon in one or other of its several forms after being intimately ground along with certain other pigments, the mixture being then perfectly amalgamated with a vehicle which surrounds each particle with a continuous film will thereafter in the solidified paint film exhibit electro-chemical properties, identical with those of undiluted and naked carbon, is a matter which only investigation will prove. It is a fact that although some carbonaceous coatings are very unsatisfactory protectors of iron and steel, others have given quite good results in service. This is only one instance out of many which might be adduced in order to show that until something is proved one way or the other under conditions strictly comparable with those which obtain in practice, it is safe to preserve an open mind.

The enormous increase in the use of steel embedded in concrete has given rise to serious questionings on the part of those concerned in the erection of such work as to the most effective manner in which the steel should be protected. Some say that no protection—beyond that provided by a coating of cement—is necessary; others, again, advocate elaborate treatment of the steel before it is hidden from sight. It is well known that the alkaline nature of Portland cement renders it up to a point an efficient retarder of corrosion by reason of the inhibitive effect exerted by alkali. At the same time, the physical and mechanical properties of ordinary Portland cement are not such as render it an ideal coating for iron and steel. A solution of the difficulty might be found in treating the steelwork with a coating which, while partaking of the nature of Portland cement in so far as its inhibitive properties are concerned, shall also possess the essential feature of a paint coating, namely, adhesive power and a minimum of porosity. Obviously, the usual oil paints are out of the question here, and the problem is one which cannot be satisfactorily solved without the co-operation of the engineer and the paint manufacturer.

Fortunately, the matter has been dealt with by a body which, for obvious reasons, has every reason to secure that practical difficulty should arise to cause nervousness on the part of those who wish to employ reinforced concrete as a mode of building construction. On March 8 last the Concrete Institute discussed the draft report of the Science Standards Committee on the Rusting of Steel inside a Concrete Covering. The conclusions arrived at were as follows:—

1. Keep the concrete in close contact with the steel so as to prevent the formation of air spaces.
2. Exclude moisture from the outside.

It is open to question whether permanently close contact between the metal and the surrounding concrete can be secured by mere packing, even if the metal has been previously coated with cement. Closer and more permanent contact would in all probability be obtained by first treating the metal with a suitably prepared production coating which, while possessing the alkaline and inhibitive properties of Portland cement, should also have those mechanical properties which would enable it to adhere firmly to the metal and provide a key between the latter and the surrounding concrete.

The economic side of protecting iron and steel is one which sooner or later obtrudes itself in all discussion of a practical nature, and any survey of our subject which left this aspect untouched on would be incomplete. May I remind you that there are three factors which influence the cost of preserving structures by means of paint?

1. Cost of materials per unit of area.
2. Cost of labour per unit of area.
3. Duration of effective service.

Unless each of these three factors be taken into consideration, we cannot form a correct estimate of the real protective value of any paint. The duration of effective service is a vital consideration. Taking twenty years as a convenient figure by which to represent the average life of an iron or steel structure, we have to estimate the number of times during twenty years that the structure under consideration will have to be painted with a given paint. Evidently the figure we decide on will partake of the nature of an estimate or approximation. At the same time, the data which manufacturers of protective paints are in the habit of collecting as to the length of service of their products, taken in conjunction with the experience which engineers and architects already possess on the subject, enable a fairly reliable figure to be arrived at. We must then know the cost per gallon or per hundredweight of the paint, and the number of square yards which these quantities will cover in one coat. We must also take into consideration the average cost for labour per yard per coat throughout a period of twenty years, and we then have all the details necessary to express in a simple mathematical form what I term the "durability figure" of the paint. The higher this figure is the greater will be the "ultimate economic value" of the paint. The "durability figure" of any paint is given by the formula:—

$$D \text{ (durability figure)} = \frac{120 c}{t (12p + l)}$$

in which—

c =spreading capacity of paint in square yards per cwt.

t =estimated number of times painted in twenty years.

p =price of paint in shillings per cwt.

l =cost of labour in pence per square yard per coat.

Suppose we wish to compare the "ultimate economic value" of two paints, a and b , of which the data required are as follows:—

	a	b
c	320	540
t	5	4
p	56s.	84s.
l	2	2

By inserting these values in the equation, we find that in the case of a , $D=5.8$, and in the case of b , $D=7.7$. In other words, b is the most economical in the proportion of 7.7 : 5.8.

I should like to emphasise the point that it is bad policy to neglect or unduly postpone the repainting of iron and steel structures. All structures treated with protective coatings should be examined at frequent intervals, and any signs of damage or deterioration to the finishing coats should be dealt with at once. In this way the charge for labour in preparing the work for repainting—always a costly item—will be kept at a minimum, and at the same time the outer coat, which has to withstand the stress of "all weathers all the time," will be maintained in an efficient, that is, an impervious condition.

And now, in conclusion, may I put forward this plea? Let engineers and architects, and all who are concerned in specifying or selecting protective paints, learn to regard these products as materials of construction, which they really are, and not the least important of the integral parts of the structure; for on them the very life of the structure depends. Let them appreciate that the laws of chemistry, of physics, and of mechanics can be applied to paint films and protective

coatings just as they are applied to iron and steel and concrete. So will they gain a clearer insight into what a true protective coating ought to be and what it ought to do, and they will aid in the attainment of that which is the true consummation in commercial and industrial affairs—efficiency with economy.

INCORPORATED CHURCH BUILDING SOCIETY.

THE above Society held their annual court on Thursday, May 18, at Church House, Dean's Yard, Westminster, under the chairmanship of the Lord Bishop of St. Davids.

The ninety-third annual report records that towards the end of the year the Society lost the kindly services of one of its honorary consulting architects, Mr. C. Hodgson Fowler, who, in the year 1900, was elected a member of the committee of architects, of which he was a zealous and much-valued member. The committee of architects elected in his place Mr. Walter Tapper, a choice which was gladly confirmed by the general committee.

The committee take the opportunity of thanking the members of the committee of honorary consulting architects, who give their services ungrudgingly to the Society in the examination with so much care of the designs submitted to them at their monthly meetings.

It is stated that the "Manual of First Aid for Archidiaconal and other Inspections," by Mr. W. D. Caröe, with a preface by the Archdeacon of Ludlow, has commanded a steady sale throughout the year. It is possible that in the near future a companion publication, for which application is often made, i.e., "A Manual of First Aid for Church Building Committees," may be compiled.

Although there is a decrease of nearly 2,000*l.* in the net income for the past year compared with 1909, there are increases in such items as donations, annual subscriptions, and collections; the fall in income is principally due to the small number of legacies.

The past history of the Society shows that it has been instrumental in aiding in the erection of no less than 2,641 additional new churches, and in assisting in rebuilding, enlarging or otherwise improving the accommodation in 6,715 other churches or consecrated chapels-of-ease. By these means more than two million additional seats have been secured, far the greater part of which are for the free use of the parishioners according to law. The actual amount of money entrusted to the Society and used in making grants towards the objects named has reached 937,866*l.*

During 1910 there were thirty-eight grants towards additional new churches, amounting in all to 5,200*l.*; ten grants for churches rebuilt (1,135*l.*); fifteen grants for churches enlarged, re-arranged, &c. (2,460*l.*); and eighteen grants for mission buildings, amounting to 520*l.*

The honorary consulting architects are as follows:—W. H. Bidlake, M.A., W. D. Caröe, M.A., C. H. M. Mileham, Temple Moore, Sir C. A. Nicholson, Bart., E. S. Prior, G. H. Fellowes Prynne, J. Oldrid Scott, R. Norman Shaw, C. S. Spooner, Walter Tapper, E. P. Warren, Sir Aston Webb, C.B., R.A.

The report was adopted on the proposition of Mr. Charles S. Spooner, F.R.I.B.A., who spoke as follows:—

It is the custom for a member of the committee of consulting architects to tell the Society at the annual general court something about the work of the committee.

First, may I say that the members of it feel that a heavy responsibility rests upon them, both to the Society and also to the promoters and authors of the churches, designs for which come before them? At the same time they feel that responsibility carries with it an honourable privilege in being thus allowed to help the Church Building Society in the excellent work which it is doing. I should like to express the sorrow we all feel in the loss of Mr. Hodgson Fowler.

The work of the committee year by year is necessarily very much the same. A considerable number of plans are laid before it, and the reports that the committee have to make on these plans are nearly always criticisms of detail, often of small matters. Small matters, however, make great differences. Such criticisms are always made in a kindly spirit—I fear, sometimes, this is not realised. Criticisms are, I suppose, generally vexatious, and everyone is inclined to reply—it is easy enough to find fault, but conditions and circumstances should be considered. The members of the committee do try to do so, as far as may be, but they are, of course, ignorant of some. My experience of the criticisms and suggestions made by the committee of consulting architects on such of my own work as has been submitted to it is that they have nearly always been suggestive and helpful.

The chief duty of the committee is to see that the rules of the Society are obeyed, and when the spirit of the rules is adhered to the criticisms, if any, resolve themselves into suggestions for some small improvement in convenience or construction. It is seldom, if ever, that matters of taste are touched upon, except to commend. Very rarely the committee is obliged to say it cannot report on a design, which generally means it is so bad that the Society could not contribute or give the prestige of its implied approval. The members of the committee naturally very much dislike having to make such a report—no one wants to put any difficulty in the way of church-building; but it is, I think, questionable whether the committee is not too lenient. A large number of very poor designs receive the approval and support of the Society month by month, designs which are devoid of dignity, poor and mean in proportion and spacing, feeble, thoughtless, and feelingless in detail, and uninteresting in the use of material, and yet comply with the rules of the Society. This is, I fear, strong condemnation, but it is not too strong of a certain number of the designs which receive the Society's approval.

This matter has been referred to several times before. Mr. Micklethwaite said in 1896:—"The committee of architects tried to keep up the standard, but a committee so constituted, dealing with drawings of all sorts and quality, coming from various parts of the country, could not draw the line very tightly. They sometimes had to pass plans simply because they were not as bad as they might be. He believed, however, that they had had a considerable influence in improving the arrangements of churches and making them really fit for the holding of services."

Mr. J. Oldrid Scott, in 1901, said:—"It was a painful fact that so many of the designs submitted were without merit." Mr. Caröe, Mr. Fellowes Prynn, Mr. Hodgson Fowler, Mr. Temple Moore, Mr. Prior, Mr. Warren, and Sir Charles Nicholson have each drawn the Society's attention to this matter since then. Is it not possible that some people would feel more inclined to contribute to the funds of the Society if it could report that its influence was causing a marked improvement, and that the number of poor designs for churches to which this Society contributed was steadily decreasing?

I am not, of course, speaking of all the designs which come before the committee; some are very good indeed, and a large number good—which fact shows that there are architects who can build a good church. Now a higher standard in design does not necessitate increased expenditure, as has been pointed out from this platform several times, notably and most eloquently by Mr. Prior in 1907. I think it cannot be said too emphatically that if the rules of this Society as regards stability of building are adhered to, there is no excuse for the poor designs too often submitted. Can anything be done to raise the standard? That is a matter which needs consideration and discussion, and this is not, perhaps, the time to consider it. But if the Society feels it is desirable to make some attempt I have no doubt its committee of consulting architects could offer suggestions. May I appeal to the clergy responsible for new churches to be more careful that the architect selected shall be a man who can build a church with dignity and interest? Let that be the first consideration and not (as I fancy is sometimes the case) that he happens to be a relation or friend of someone connected with the church, or that he lives in the neighbourhood, &c.—all of which may be excellent secondary reasons—but the first should be that he can build a church of which everyone may say, without any reservation, "I was glad when they said unto me, we will go into the house of the Lord."

We have heard a good deal lately about cheap churches. The adjective is one which, I think, most reverently minded people will dislike. I cannot imagine anyone caring to describe their church as a cheap church. Cheap is almost invariably accompanied by another and unpleasant quality which is apt to appear as soon as the work has to stand the test of wear and tear. Cheap building nearly always proves to be very expensive in upkeep, and so is the reverse of economical. The Church Building Society has set a very reasonable and good standard of building. Its rules have been made by men with great experience of church finance and of church building, in consultation. They have been made with a view to securing to the subscribers an assurance that their money shall be spent wisely upon buildings which shall be substantial, durable, and properly and conveniently planned. The general advice for new churches which precedes the building rules could not, I think, be much improved in the space occupied. The rules of the Society do not allow of the cheapest ways of building. Building committees and others, including, I fear, some clergy used to the methods

of the "jerry-builder," are apt to consider our rules too stringent, especially in the matter of thick walls. At the last revision, in 1909, the Society made this rule more elastic and allowed the committee of architects greater discretion, so that now it is possible to concentrate the strength necessary in piers or buttresses with curtain walls between. The curtain walls must, of course, be substantial. This certainly allows of economical building and removes any appearance of too great stringency. I say quite deliberately that anything less than the stability and quality of building that the rules require is the reverse of economy and ought not to be allowed by authority—and anything less than the space and arrangement demanded renders a church inconvenient and unsuitable for services of the English church. I feel that if the Bishops would require that standard of stability, arrangement, and space as a condition of episcopal sanction to plans they would very greatly benefit the clergy and churchwardens of the dioceses under their charge, and save waste of money. If that should ever be the case, the question of cheap churches need not cause us much anxiety.

An absolutely plain church, without moulding or carving, may be a very noble building, if it is well built. All who entered it were tremendously impressed by Bentley's great church at Westminster when it was first opened, yet it was nothing but a great brick hall with concrete domes overhead, no ornament except a painted rood hanging over the sanctuary. The whole impressive effect was produced by fine proportion and good spacing. Of course, mere bigness is a very impressive quality, yet even that may be rendered comparatively unimpressive by poor proportions or by bad building. Now the same sort of effect can be produced in a smaller building by similar means. Costly material is unnecessary, any good, durable building "stuff" will do in competent hands. If an architect cannot produce a fine effect by means of proportion and mass, the most glorious material in the world will not enable him to do so—nay, I think it would probably hamper him; he would be tempted to show it off, and to try to hide his incapacity behind its fine qualities.

I feel that in addressing the Church Building Society one may almost unreservedly condemn the idea of cheap churches without running the risk of being misunderstood. Everyone here knows well, I am sure, and sympathises with the difficulties that the promoters of a new church experience in raising enough money to pay for it. The object of the Church Building Society is to help and encourage these people, and not to put any difficulties in their way. I am sorry to be guilty of such a platitude, but it is the only reply to certain criticisms of our rules. I am sure that one of the greatest helps the Society gives in contributing to a new church is in saving the promoters from "penny wise, pound foolish" methods of building, and in strengthening the hands of the architects to resist pressure to build too cheaply and consequently badly. Strict economy is generally necessary, and it makes it difficult, no doubt, to build a church with enough height, or with large unoccupied floor space, which is so desirable. Nevertheless, a competent architect can build a good church, even when the severest economy is necessary, provided it be well and solidly built; but no architect, however gifted he may be, can build a good cheap church.

Grants of money were made in aid of the following objects:—Building the church of St. Gabriel, Bishopwearmouth, Durham, 250*l.*; rebuilding the churches of St. James, Milton, near Portsmouth, 100*l.*; and the Bourne, St. Thomas, Surrey, 70*l.*; and towards enlarging or otherwise improving the accommodation in the churches at Brotherton, St. Edward the Confessor, Yorks., 25*l.*; Hucclecote, St. Philip and St. James, near Gloucester, 30*l.*; Layer Marney, St. Mary-the-Virgin, Essex, 60*l.*; Mold, St. Mary, Flint, 100*l.*; and Stoke St. Milburgh, St. Milburgha, Salop, 15*l.* Grants were also made from the special mission buildings fund towards building mission churches at Caergeiliog, near Rhoscolyn, Anglesey, 30*l.*; Heathfield, Sussex, 25*l.*; and Holmer, St. Mary, near Hereford, 25*l.* The following grants were also paid for works completed:—East Cowton, All Saints, near Northallerton, 70*l.*; Birchington, All Saints, Kent, 35*l.*; Tarrant Crawford, St. Mary, Dorset, 50*l.*; and Litherland, St. Andrew, near Liverpool, 40*l.* In addition to this the sum of 90*l.* was paid towards the repairs of ten churches from trust funds held by the Society.

THE Hexham Urban Council has decided to erect ornamental gates in the Abbey grounds to commemorate Lord Allendale's gift of the Seal to the town, and a special meeting is to be held to decide upon the design and position of the gates.

THE ILLUMINATING ENGINEERING SOCIETY.

(Continued from last week.)

IT will be recalled that in the daylight and artificial illumination of a classroom at Haverstock Hill School the most striking fact brought out is the large variation in the latter from one side of the room to the other; to counteract this the two lights furthest from the window are controlled by a separate switch, so that they can be turned on to supplement the failing daylight illumination when needed. The same variation is shown, even more strikingly, in the case of the Birkbeck Institute and a classroom at the Central Technical College.

In the former case the illumination varies from thirty foot-candles down to only 0.5. In the case of the classroom at the Central Technical College there is again a very wide variation, notwithstanding the fact that the room is a high one and one entire side is devoted to window space; one cannot help observing that even when the relation of window-space to floor area is not less than the prescribed value of one-fifth, there may often be some desks which receive insufficient illumination.

In both the cases referred to the view was blocked to some extent by buildings. A complete contrast is afforded by Harrow School. The window space in these old buildings appears at first sight clearly insufficient, the more so as they are composed of heavily latticed glass. We were informed, however, that the access of daylight was considered exceptionally good, the reason being that the school stands on a hill with no surrounding obstructions.

In passing, it may be mentioned that in all the schools and institutions visited it seemed to be accepted as an invariable rule that the windows should be on the left hand of the students. The only exception was one classroom at Harrow, where the antiquity of the building is probably the explanation. Seeing that this rule is so invariably followed in the case of daylight, one is led to ask why the same precept is not adopted in the case of artificial light, and whether a general illumination with light coming from all directions is equally effective?

The following approximate figures relating to the window space per square foot of floor area in different classrooms visited may be of interest:—

School or College.	Window area per Square Foot of Floor (Approx.).
CENTRAL TECHNICAL COLLEGE.	
Classroom	0.22
WOOLWICH POLYTECHNIC.	
Classroom	0.25
Lecture theatre	0.17
BIRKBECK INSTITUTE.	
Physics lecture theatre	0.13
HARROW SCHOOL.	
Large hall	0.16
Headmaster's classroom	0.15
Mathematics "	0.15
ST. PAUL'S SCHOOL.	
Classroom	0.16
CITY OF LONDON SCHOOL.	
Classroom	0.24

(Some interesting suggestions for a modification of the well-known rule, based on an abstract kindly supplied by Dr. Kerr, are added in the appendix.)

APPENDIX.

Note on the Dimensions of Windows in Schoolrooms.

(Engelbracht, "Zentralblatt der Bauverwaltung," No. 52; "Kleinere Mitteilungen in Zeitschrift für Schulgesundheitspflege," xxiv. i., Jan. 1911.)

Hitherto the rule has been followed that the window area in schoolrooms should be one-fifth of the floor area. This fraction of one-fifth, derived from practical experience, applies more especially to class-rooms in which the depth of the room from the window is about 6 metres.

When one considers that the intensity of the light derived diminishes with the square of the distance, it is evident that rooms of greater depth than the above tend to be under-lighted, while those of smaller depth may receive an excessive amount of light.

Engelbracht has therefore developed a simple formula of useful application in such cases, namely

$$f = \frac{F}{5} \cdot \frac{t^2}{36}$$

where f = window area in square metres.
" F = floor " "
" t = depth of classroom in "

TABLE V.—ILLUMINATION DATA OF COLLEGES AND INSTITUTIONS.

College.	Nature of Lighting.	Consumption in Watts. (Estimated.)	Total Watts per Square Foot.	Illumination (Foot-candles)		
				Demonstration Tables.	Desks. Measured.	Black- board, &c.
CENTRAL TECHNICAL COLLEGE.						
Lecture theatre (Electrical Engineering)	Tungsten	880	0.63	4.5	1.0-3.0	3.0
	Tantalum	120				
	Enclosed arcs (2)	600				
Classroom No. 32	Carbon	720	1.1	1.8-2.0	1.0-2.4	1.0-1.6
UNIVERSITY COLLEGE.						
Lecture theatre (Electrical Engineering)	Tungsten	320	2.0	2.3	3.3-5	2.3-3 Diagrams 3-7
	Tungsten (shaded), for demonstration table	150				
	Linolite, for blackboard	600				
Classroom	Carbon	180	1.5	—	2.5-3.3	2.3-0
	Carbon for (blackboard)	120				
Laboratory	Tantalum (opal shades)	400	0.5	—	1.8	—
EAST LONDON COLLEGE.						
Lecture theatre (Electrical Engineering)	Tungsten (with Holophane bowls)	1,000	0.75	2.5	2.0-2.5	1.5-2.2
Drawing office	Tungsten (with Holophane reflectors)	1,170	1.2	—	6.0	—
NORTHAMPTON INSTITUTE.						
Classroom No. 72 (old)	Carbon	240	0.8	0.7	0.65	0.5
Lecture theatre No. 73	Tungsten (opal shades)	150	0.6	2.0-2.5	1.5-2	1.1-5
	Carbon (for blackboard)	360				
Lecture theatre No. 78 (New)	Tungsten (opal shades)	600	0.4	1.3-1.9	0.75-1.5	1.4
Drawing office	Inverted arcs	2,000	1.15	3.8	3.7-5.3	2.8
BIRKBECK INSTITUTE.						
Lecture theatre (physics)	Tungsten	210	0.75	3.0	1.0-2.9	3.0
	Linolite (for blackboard)	300				
Laboratory (physics)	Tungsten (opal shades)	650	0.6	—	{ centre 3.5 side 1.2	—
SOUTH-WESTERN POLYTECHNIC.						
Lecture theatre (Electrical Engineering)	4 Inverted arcs (white ceiling)	1,200	1.2	3.5	2.3-8	2.2
Lecture theatre (Mechanical Engineering)	4 Enclosed arcs	1,000	0.8	2.5	3.4	6.2
Drawing office	Carbon (enamelled shades)	1,800	2.0	4	4	0.6-1.0
WOOLWICH POLYTECHNIC.						
Lecture theatre... ..	Linolite (screened)	810	1.3	0.7-0.8	0.8-1.3	2.8-3.0
	Carbon	180				
	Linolite (for blackboard)	540				
Classroom	Tungsten (cardboard shades)	252	.94	2.4	2.8-4.4	0.8-2
	Linolite (for blackboard)	180				

From this formula it follows that

$$\begin{aligned} \text{with a depth of 7 metres, } f &= \frac{54}{5} \cdot \frac{7^2}{36} = 14.7 \text{ sq. m., roughly } \frac{1}{4} \text{ F.} \\ \text{,, ,, ,, 6 ,, } f &= \frac{54}{5} \cdot \frac{6^2}{36} = 10.8 \text{ ,, ,, } \frac{1}{5} \text{ F.} \\ \text{,, ,, ,, 5 ,, } f &= \frac{54}{5} \cdot \frac{5^2}{36} = 7.5 \text{ ,, ,, } \frac{1}{7} \text{ F.} \\ \text{,, ,, ,, 4 ,, } f &= \frac{54}{5} \cdot \frac{4^2}{36} = 4.8 \text{ ,, ,, } \frac{1}{11} \text{ F.} \end{aligned}$$

It will therefore be seen that on this estimation classrooms having a depth of about 7 to 8 metres will in general be completely under-lighted by the application of the rule referred to. On the other hand, in rooms of less than 6 metres depth needlessly large windows would be provided. According to researches undertaken in the Hanover district, Engelbracht's formula appears to have led to very consistently satisfactory results.

Mr. R. J. WALLIS-JONES, referring to the communication of Messrs. Gaster and Dow, said it would, in his opinion, add considerably to the value of the data given as to the illumination of various schools if the authors could also state the colouring of the walls of the rooms. He had found that walls distempered a light green tint resembling the colour of a heron's egg not only gave a good illuminating effect, but also had a restful tendency. He would like to know if the observations of illumination in foot-candles were measured by one observer only. He had recently obtained very good results in high classrooms by using Holophane "arc" fittings, i.e. metal filament lamps frosted with individual Holophane shades, several of which were grouped in a cluster beneath a Holophane dish of large diameter. With regard to blackboard lighting, he agreed with some of the speakers that a blackboard should be treated in the same way as a stage or picture, that is to say, the board itself should be illuminated with the source of illumination totally hidden from the students in the class. He also advocated that where incandescent electric lamps in classrooms were fixed within the range of vision, they should in all cases be frosted so that no portion of the filament is visible.

Mr. F. W. GOODENOUGH (Gas Light and Coke Company) said all the members of the Society would agree with him that they were very much indebted to Doctors Kerr and Harman for their valuable contributions on this subject. With Dr. Kerr's paper he was not concerned, because it dealt with daylight illumination, and naturally he preferred that daylight illumination should be as limited as possible. In his opinion, a discussion of this character helped to prove the value of the Society, and so far as practical results issued from the discussion, the reputation of the Society would be considerably enhanced if they could arrive at a standard illumination for various types of schoolrooms, lecture halls, and so forth. Such a work would be of very great value to the community at large. The standard of illumination mentioned by Dr. Harman as having been given by Sir H. Halford seemed rather out of date at the present time; we wanted a better illumination nowadays than one which enabled us to see the ace of clubs. Dr. Harman's remark that the naked jet was fast vanishing he thought was a reflection upon the enterprise of the British nation. Eight years ago he visited all the principal Continental cities to investigate systems of street and other illumination, and the most prominent thing which struck him during his inquiries was the entire absence at that date of the naked jet on the Continent, whilst we in this country were still using about 50 per cent. of naked lights instead of incandescent mantles. Two or three years after that he had occasion to approach the War Office on the subject of the illumination of barracks, many of which were still lighted with naked burners, and he received the very characteristic reply that the subject of incandescent lighting had been under consideration for some years, and that the War Office were thinking of taking action in the matter. He would only say to everyone concerned in the lighting of scholastic establishments that the sooner the naked jet became as absolutely unknown in this country as it was on the Continent, the better for everyone.

He now wished to join issue with Dr. Harman on the question of inverted burners. Dr. Harman said in his paper that the one sole advantage of the inverted burner was the absence of shadow below the light, but he did not think Dr. Harman had obtained all the information that he might have on the question of the relative efficiency of the inverted and upright burner. Careful tests showed that at least 33½ per cent. more light per cubic foot of gas used could be

obtained from an inverted burner compared with an upright burner, which was, of course, a very substantial advantage of the one over the other.

(To be continued.)



[The Editor will not be responsible for the opinion expressed by Correspondents.]

The Crystal Palace.

SIR,—A false impression has been created, due mainly to the inferences of two of your morning contemporaries in incorrectly allocating the authorship of the Crystal Palace Empire in Miniature idea. This misconception is likely to cause some confusion in connection with the work and very much wider sphere of the Homes and Grounds of Empire project, contemplated for several years past, of which the Festival of Empire Exhibition is a result, and forms with it leading features an All Red route, and its governing characteristics an extensive part of the original and future plan. Will you allow me through *The Architect and Contract Reporter* to foreshadow the very excellent prospect of the Crystal Palace as a permanent Exhibition Empire centre being discussed at the Imperial Conference? This probably will arise through the introduction to notice of the proposition "That the Crystal Palace and grounds (when acquired at a market valuation) should constitute London's gift to the Empire, to be maintained at the expense and by the joint control of the Parliaments in the King's dominions for expositions of Empire in perpetuity." It has, Sir, been ascertained that there is a remarkable unanimity of opinion among Liberal, Conservative, and Labour politicians and public men throughout the Empire favouring the Crystal Palace becoming the corporate property of the Empire, supported also by London borough councils and many members of the London County Council and City Corporation.—I am, Sir, yours truly,

W. A. BAYST.

Woodford Green.

Edinburgh Theatre Fire.

SIR,—This sad catastrophe carried with it a lesson that is in danger of being overlooked, hence this letter. The Press and the manager of the hall have made it clear that the safety curtain helped most materially in the fortunate escape of the entire audience. That curtain was made 19 years ago by John Stones, Ltd., of Ulverston, and is composed of an angle tee iron frame covered back and front with corrugated steel, and the 5 inch cavity filled with the best light and durable non-conducting material available.

Unfortunately in later years, influenced partly by fashion, partly by the greater ease with which it can be manipulated, partly by the convenience with which it can be fixed in position, and partly, perhaps, by the lower price, the woven asbestos curtain has in far too many cases been adopted. Its advantages as set out above are more than counter-balanced by the fact that (contrary to popular opinion) asbestos is a good conductor of heat, and at a fire of any magnitude will practically soon be as hot at the one side as the other; it is easily torn, say, by the falling of scenery or other debris, and even where kept taut by a heavy roller the draught of a fire causes it to sag at the sides until it ceases to be an effective barrier.

As an old volunteer fireman, I have seen both these classes of curtain in use at actual fires, also Gardiner's Patent which was supplied in use at actual fires, also Gardiner's Patent which was supplied with water in place of non-conducting material, and which acted quite well, but proved inconvenient to maintain so far as the supply of water was concerned, and I venture to hope that the lessons of experience will cause the Stones curtain to be used in preference to the other kinds.

Should it be said that I am influenced by the fact that I am chairman of John Stones, Ltd., may I say that I am also chairman of Seaman & Co., Ltd., of Stockton-on-Tees, who have made and supplied dozens of asbestos curtains?—Yours faithfully,

C. J. SEAMAN.

145 Cannon Street, London, E.C.:

May 18, 1911.



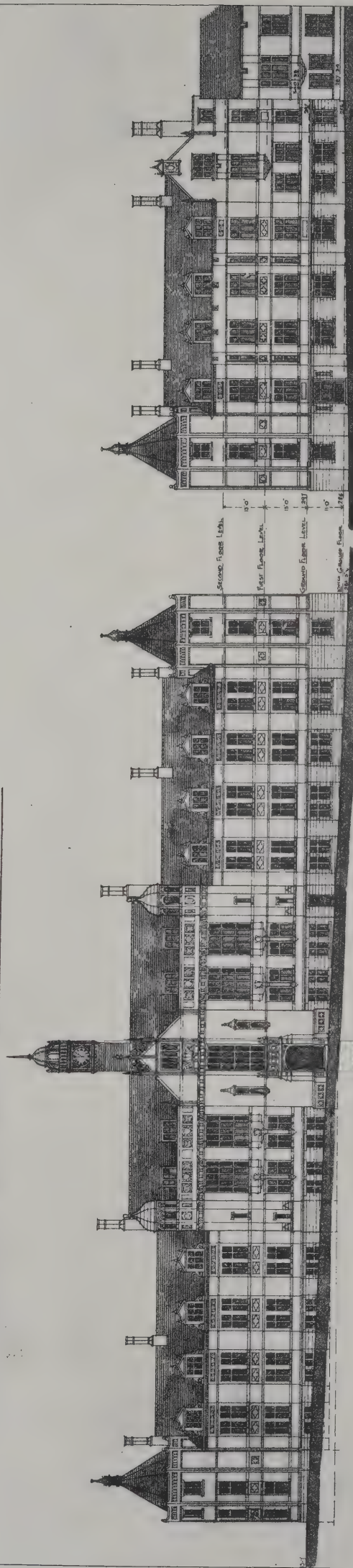
The Architect, May 26th 1911.



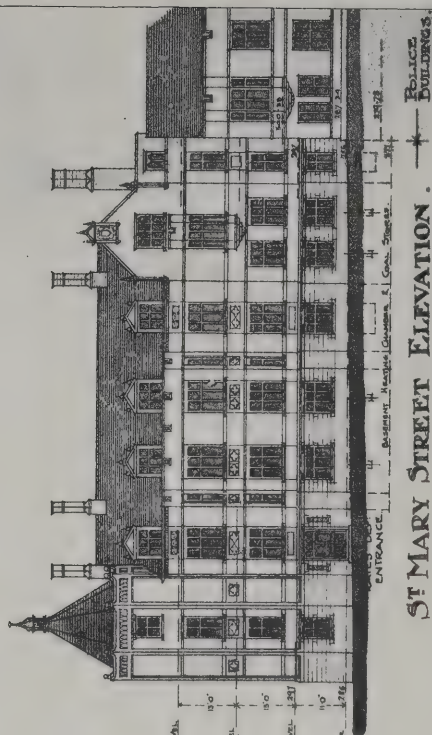
"INK" PHOTO. SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

CATHEDRAL SERIES. NO. 671.—ELY: WEST DOORWAY, AND PART OF GALILEE PORCH.

CITY OF COVENTRY. PROPOSED MUNICIPAL BUILDINGS.

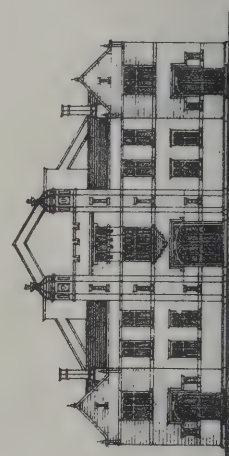


ELEVATION TO EARL STREET.



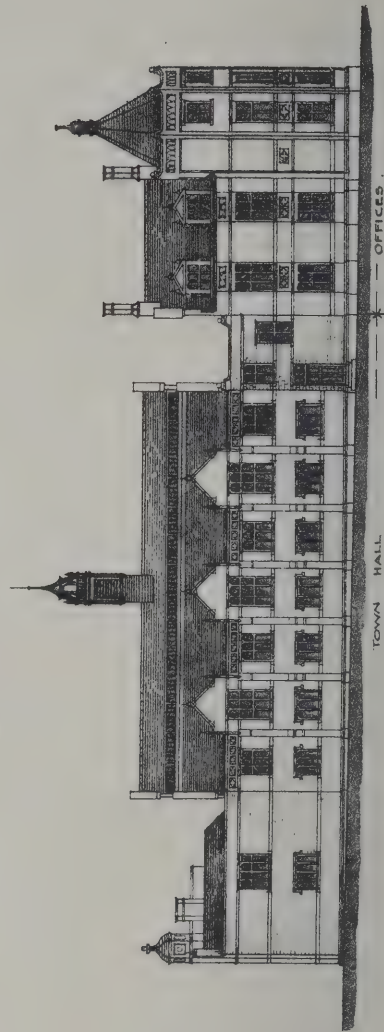
ST MARY STREET ELEVATION.

POLICE BUILDINGS



ELEVATION TO BAYLEY LANE.

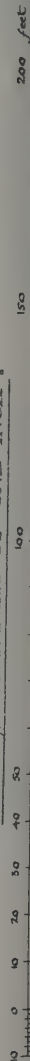
ST. MARY'S HALL



ELEVATION TO HAY LANE.

OFFICES

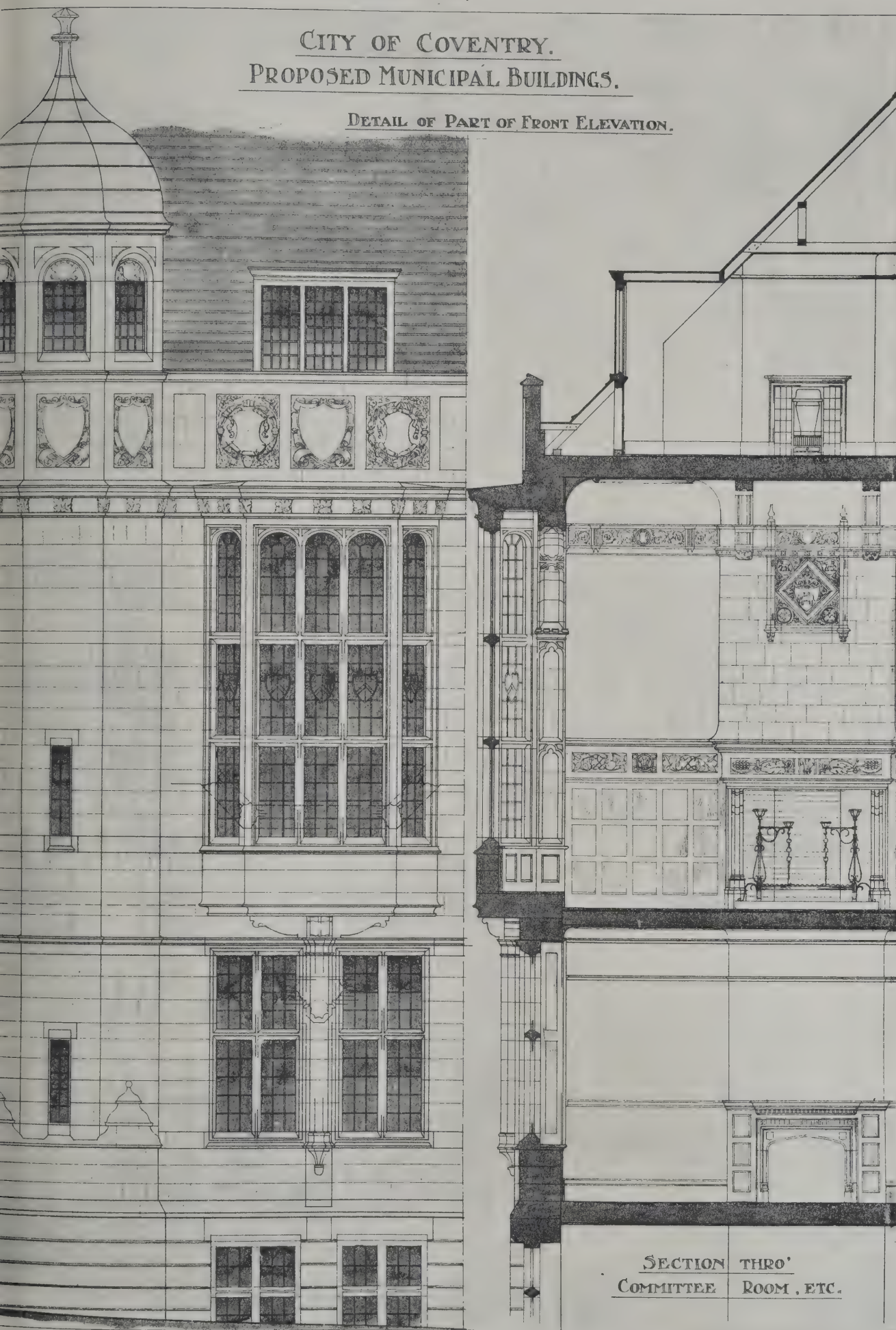
SCALE, SIXTEEN FEET TO ONE INCH.



The Architect, May 26th 1911.

CITY OF COVENTRY.
PROPOSED MUNICIPAL BUILDINGS.

DETAIL OF PART OF FRONT ELEVATION.

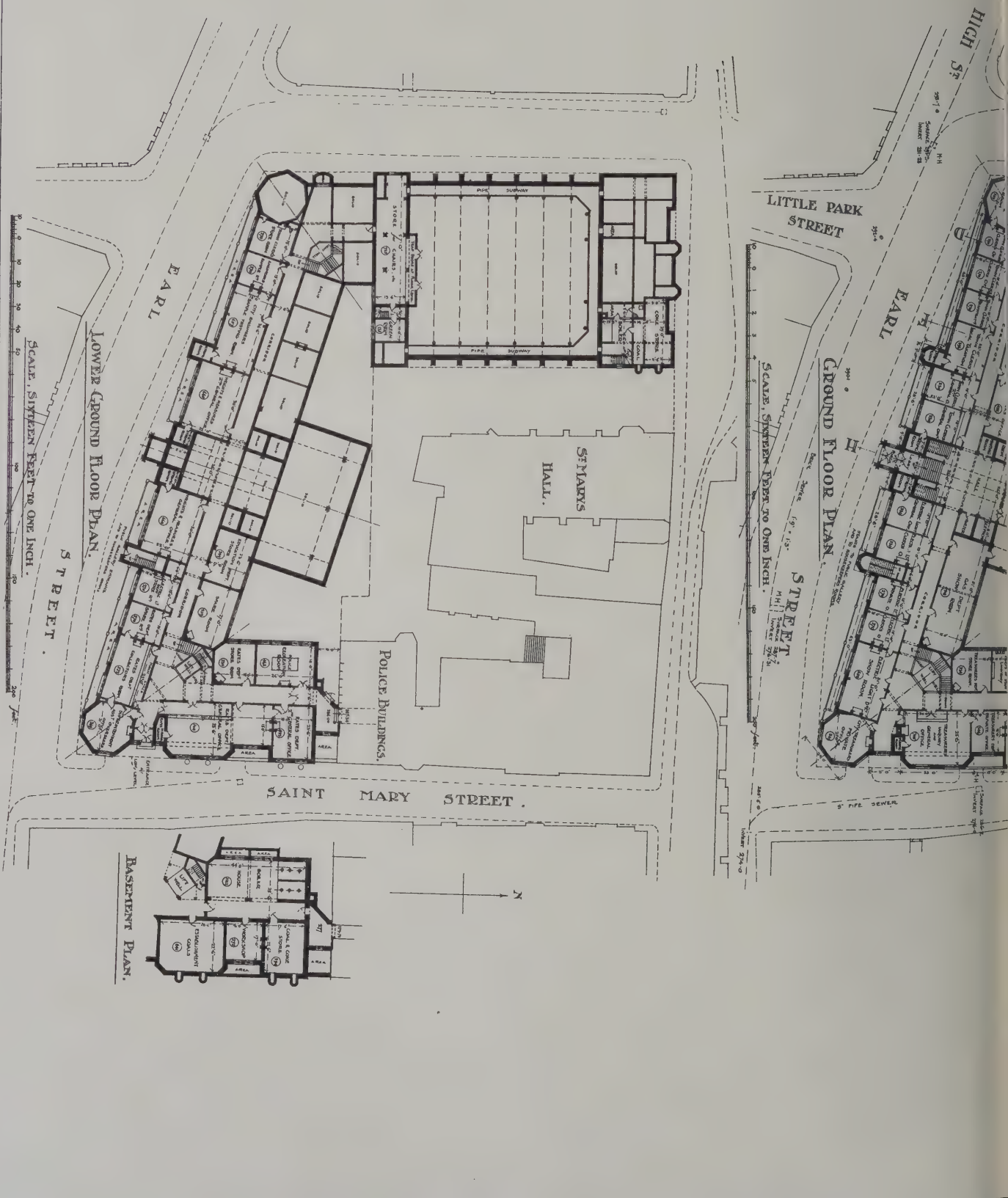


SECTION THRO'
COMMITTEE ROOM, ETC.

"INK-PHOTO" SPRAGUE & CO LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

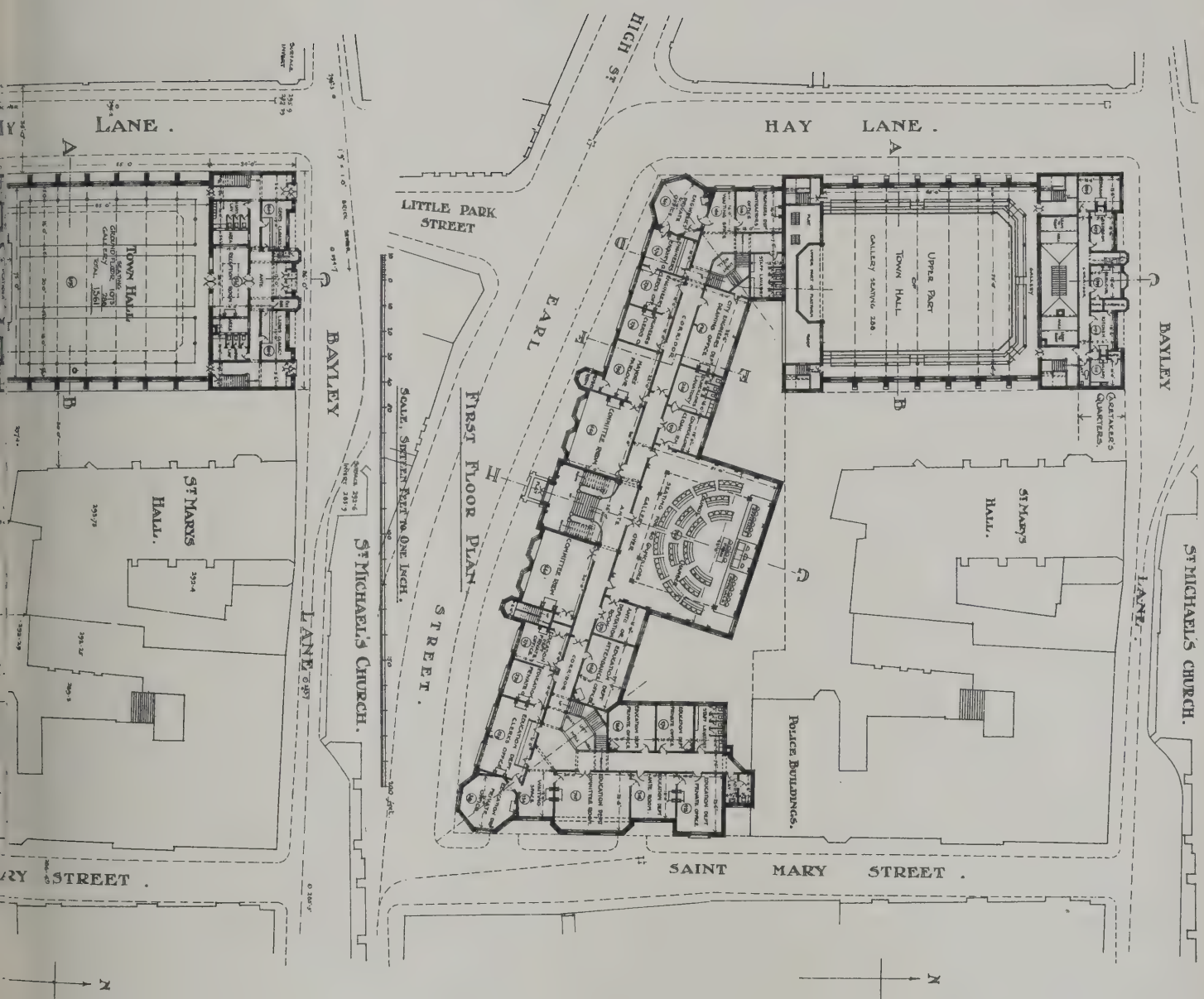
COMPETITION DESIGN BY MR. ARNOLD S. TAYLER, A.R.I.B.A.

CITY OF COVENTRY. PROPOSED MUNICIPAL BUILDINGS.
 PLANS of COMPETITION DESIGN by MR. ARNOLD S. TAYLER, A.R.I.B.A.



"INK PHOTO SPRAGUE & CO. LTD. 4 & 5, EAST HARGREAVE STREET, FETTER LANE, E.C.

The Architect, May 26th 1911.



The Architect.

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FORTHCOMING EVENTS.

Wednesday, June 7.
Concrete Institute : Summer Meeting (1) Paper by Professor Beresford Pite on "The Aesthetic Treatment of Concrete"; (2) Visit to the Wesleyan Memorial Hall; (3) Annual Dinner.
Thursday, June 8.
Concrete Institute : Summer Meeting (2nd day) (1) Mr. Alfred E. Corbett on "The Y.M.C.A. Building at Manchester," and Discussion on a Report of the Reinforced Concrete Practice Standing Committee on "The Standardisation of Drawings of Reinforced Concrete Work"; (2) Visit to Wharf and Warehouse in London Dock; (3) Conversazione in the R.I.B.A. Galleries.
Saturday, June 10.
Edinburgh Architectural Association : Proposed Joint Visit to Glasgow with the Glasgow Institute of Architects.
Institution of Municipal Engineers : Visit to the Works of Messrs. Aveling & Porter, Ltd., Rochester.
Northern Architectural Association : Visit to Sunderland.

ROMFORD GARDEN SUBURB.

THE marvellous exhibition which was opened yesterday at Gidea Park, an eastern adjunct of Romford in Essex, is the most remarkable object lesson on modern domestic architecture that has ever been offered to the British public. True that some of the houses are still unfinished, as in our previous notice we anticipated would be the case, but these are of little moment. There is more than enough to occupy the careful attention of the visitor for not one but many inspections.

As most of the houses have been built in accordance with the conditions of a competition which called for two classes of house, first, a detached house, to cost 500*l.*, second, a detached cottage, to cost 375*l.*, the exhibition at Gidea Park is that of the class of residence that has, up to now, been left to the speculating builder, and destitute of all architectural skill save that of the builder's son who has spent a winter session at a Polytechnic architectural department.

At Gidea Park the up-to-date architect has met the jerry-builder on his own ground and licked him into a crooked hat. Cheapness and a certain amount of meretricious show, mahogany handrails, and tiled hearths have been the strong point of the jerry-builder's monotonous row of ditto, ditto houses. At Gidea Park our modern architects have provided for the money the same amount of accommodation that the jerry-builder has offered, but with a separate individuality for each house or cottage and an artistic character that the jerry-builder and his Polytechnic or School of Art designer could never attain.

We are to-day face to face with a remarkable revolution in domestic architecture. In the days of POPE and ADDISON this class of building was the domain of the dilettante who as the lesson of his grand tour was imbued with the classicality and the stateliness of the Palazzi of Italy. In the Victorian Era the prominent architects of houses had for the most part clients who could afford to spend their 10,000*l.* or 20,000*l.* on their homes. To-day architects of great ability and high artistic skill are ready to work for the man who cannot afford more than 500*l.* or even 375*l.* for his house.

No one in future need live in a speculating builder's house, one of a hundred all alike, equally bad in arrangement, in construction, and in lack of beauty. Every man can have a house, individual in character, suited to his own requirements, beautiful and well designed by a capable architect, who will give him as good value for his hundreds as his richer compatriot can obtain for his thousands. This is the lesson that is taught by the Romford Garden Suburb exhibition.

Turning from the public point of view to the technical, we have some highly interesting solutions of the problem

of planning a very small house. The keener spirits amongst the designers of the houses that have been built on the Gidea Park estate have realised that the small house or cottage should be built to live in and not to entertain. Hence the "reception rooms" of the house-agent who is trying to let or sell the productions of the jerry-builder have given way to the "living rooms" of the up-to-date architect. The man who can afford only a small house does not want to entertain on a grand scale at home. He can do that far better at a restaurant. He wants a good room in which he and his family can live their daily life, the "keeping room" of East Anglian parlance, which naturally occurs to us in connection with a garden suburb in Essex. He also wants what the Americans call a "den," a small room in which he can read, write, or see a visitor for a quiet and private chat.

In class I., the 500*l.* house, some of the architects have made the mistake of providing a dining-room and drawing-room rather than the wiser arrangement of a large living room and small hall or study such as that in the house by Messrs. BARRY PARKER & RAYMOND UNWIN, No. 41 in Heath Drive, although this is not for competition. Somewhat of the same idea dominates the plan of No. 239 in Reed Pond Walk, also by Messrs. BARRY PARKER & RAYMOND UNWIN, which is for competition in class I., that is, the cost of building does not exceed 500*l.* Here the living-room and the hall or study can be thrown into one or can be separated into two distinct apartments. This is not quite ideal because the small room ought to be permanently distinct. It would be awkward, for example, if a visitor whom the master or mistress desired to see privately called when the two rooms happened to be in use as one, and had to wait whilst a busy re-arrangement of doors and partitions was accomplished.

A closer approach to what we consider the ideal plan of a very small house is seen in No. 227 and No. 228, Reed Pond Walk, for both of which Mr. C. M. CRICKMER is the architect. He calls his small rooms "dining-rooms," but as the sizes are 12 feet by 10 feet and 12 feet by 11 feet they are a little wee for dining. Mr. CECIL A. SHARP calls his rooms "living-room" and "boudoir" in the house No. 229 Reed Pond Walk, which is getting still closer to the right thing. Mr. BAILLIE SCOTT, in a clever plan of No. 232 Reed Pond Walk, has arranged living-room, parlour, and dining-room *en suite*, with wide openings between, so that the three can be thrown into one or sub-divided in a variety of combinations. By the way, we were fortunate in inspecting this house before lunch. We should not like to traverse the first floor corridor after a dinner with a City Company or a Masonic Lodge, or even after the wind-up of a day on the golf

"THE ARCHITECT" STUDENTS' SKETCHING AND MEASURING CLUB,



CHIMNEY-STACK AT PENSURST, KENT.—From a Drawing by "Plato."

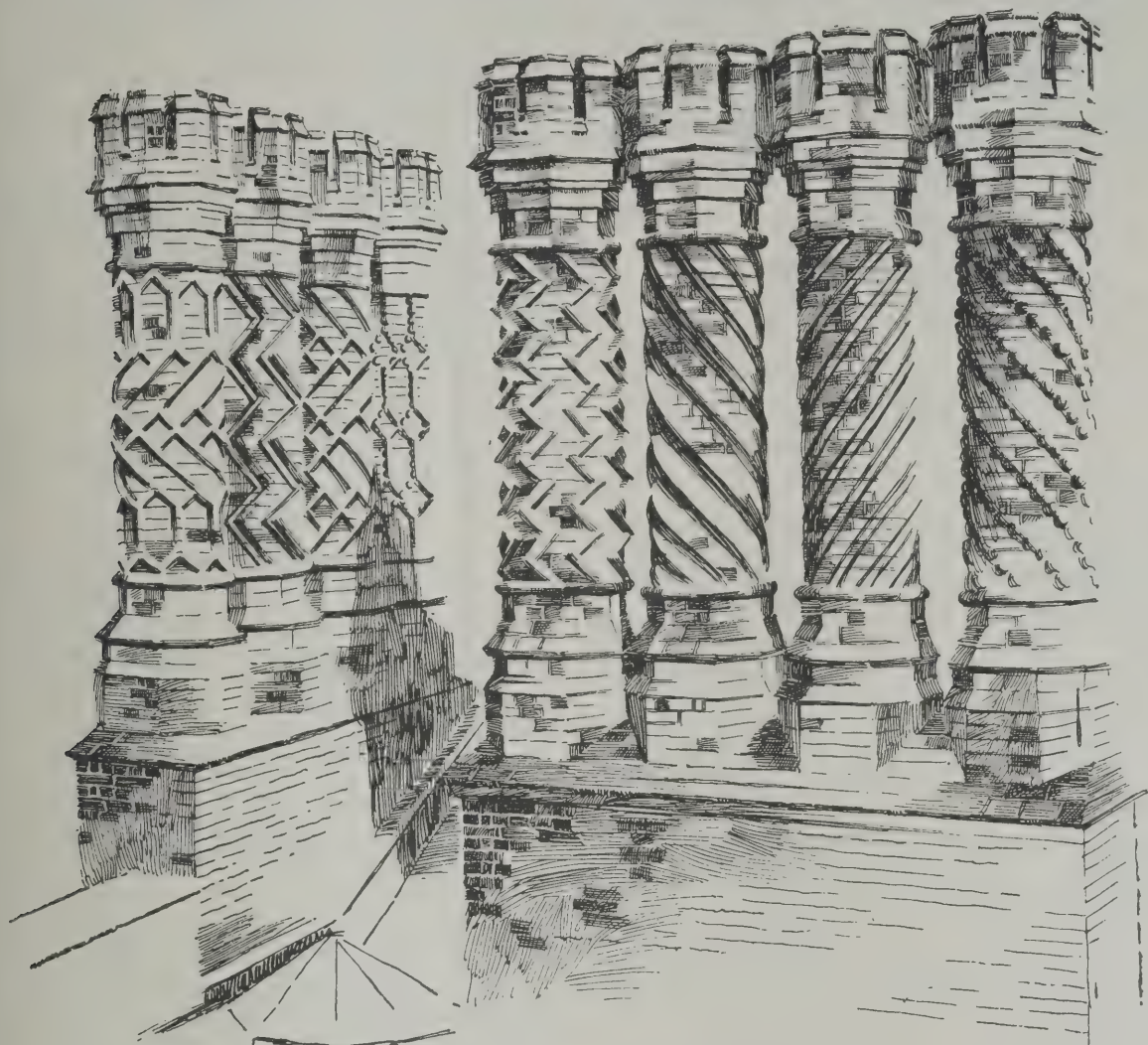
links, which are a feature of the Romford Garden Suburb. Another point of plan which is worthy of especial notice in the very small house is the relation of kitchen and scullery. The wisest arrangement seems to be to make the scullery merely an alcove adjunct to the kitchen, or even in the case of the 375l. cottage, to have a scullery only but with a cooking range in it. One must remember that there is a vital difference between the manner of life of an artisan and of the probable tenant of a 375l. house in a garden suburb. The artisan lives in his kitchen, the garden suburbanite does not. Possibly he does not keep a servant who lives in but is content with a daily worker who, as the Americans say, does "chores," and who does not want a sitting-room, as she works, or is supposed to, all the time she is in the house and then goes home. One point must not be forgotten, that in the very small house it is important for the scullery to be close to the dining place. We do not say dining-room, for meals may be taken in a distinct portion of the "keeping-room."

Such are some of the problems that have been faced in various ways by the architects who have designed the houses now on exhibition at Gidea Park, and who have given to their solution an amount of thought passing the comprehension of the smartest jerry-builder who ever sold a box of bad bricks and rotten mortar at less than cost price for the sake of an improved ground rent.

The solutions of these problems may be seen in "The book of the Exhibition of Houses and Cottages, Romford Garden Suburb, Gidea Park," which is the catalogue fully illustrated, of the exhibition opened yesterday, but the full effect of the planning and other manifestations of architectural skill can only be obtained by a visit to Gidea Park. One should not forget to mention that the Romford possesses much of historical and antiquarian interest, of which a pleasantly written account is given in the book.

There are also a number of opinions and epigrams by various well-known people, of which perhaps the most valuable are those of Sir FREDERICK TREVES, who amongst many useful criticisms, says: "One occasionally sees a medley of building material employed in the construction of single houses. In one such house I noticed Bath stone, red brick, tile hanging, half-timber work, and rough cast. This is surely undesirable, as is also imitation building material illustrated by plaster so treated and painted as to imitate half-timber work. The production of such mimicry would not deceive a child of six, and would spoil any house however well designed." Sir FREDERICK has put his finger upon the appendicitis of modern domestic architecture, the inflammatory exaltation of material, of which amongst much that is excellent there are some examples at Gidea Park.

"THE ARCHITECT" STUDENTS' SKETCHING AND MEASURING CLUB.



CHIMNEYS AT HAMPTON COURT.—From a Drawing by "PLATO."

POSSIBLY no other building affords better or more varied examples of the external treatment of chimney stacks than Hampton Court. The Palace, as is well known, originated with Cardinal Wolsey, who in 1515 acquired the land on a lease for 99 years and lost no time in erecting a most magnificent edifice. Wren, in later years, pulled down a great part of it and rebuilt on a large scale.

THE A.A. PLAY.

FOUR years ago *The Purple Patch* devoted its sixth Spasm to a play, or architectural extravaganza, christened "Putting the Best Face Upon It." For 1911 the promoters decided to repeat this success, trusting no doubt to shortness of memory on the part of such of their audience who might have been present before. The performance is, however, preceded by a curtain raiser, laid in the A.A. Council chamber, which has been written to show "the inherent inability to conduct a committee common amongst most of the members of the artistic professions," and to suggest the reasons for reviving the production which follows. It would appear that the lack of business training exemplified by the rather chaotic meeting of this A.A. Play Committee is only one of the many obstacles confronting these high priests of the drama. They lack sufficient encouragement, or rather sufficient funds; they have little idea and no agreement about possible subjects for a new play; there is an undercurrent of animosity against some of the habitual actors, and time is getting short. In consequence of all this little progress is made towards the A.A. Play for 1911, until the much-harassed A.A. Secretary (Mr. Cleek) proposes that an old one should be revived. Such an easy escape out of the difficulty is welcomed by all; and thus it was that they came to adapt "Putting the Best Face Upon It."

The stage is set to show a nearly completed villa just outside Rome, of the Middle Roman Empire, and the scenery reveals the fountain head of twentieth-century garden city architecture. The prologue explains that a Classic setting was chosen because architects have to obey the fashionable demand for Classic. Besides, "our modern clothes would ill become a comic opera writ in lightest vein." But the play combines both mystery play and masque, Greek tragedy and musical comedy.

The Purple Patch, as Prologus, quickly puts us into possession of the necessary facts and introduces the characters. "The Architect" is engaged on a veritable labour of love, for after a few visits from his client Saccharissa, fair, sweet, and twenty, he lost his heart to her in spite of insistent demands for cupboards and hot water everywhere. "The Builder," a prosperous man who makes his 10 per cent. or more on every job, had his dull soul inflamed at sight of the maid, too. Hence, he and the architect have come to regard each other with more than usual enmity. The Purple Patch has been asked by Saccharissa to act as assessor concerning the respective merits of these two worthy representatives of Art and Business, both of whom have by letter proposed to her.

Being the dinner-hour, the workmen are caught enjoying a little well-earned rest. How well earned no one knows better than they do, and their daily labours are thus described:—

We comes late to the job in the morning,
And we knocks off work long before night;
We sleeps in all kinds of positions,
Except when the foreman's in sight.

We are the masons and plasterers,
We do the plumbing and paint;
We are the brickies and labourers,
But we all think John Burns is a saint.

We plays with putty and plaster,
Gently we lays a few bricks;
The Union won't let us go faster,
And gets us more ha'pence than kicks.

We are building this house as a favour,
The hours between bricks to beguile;
So we've put on our nicest behaviour,
Though we hardly approve of the style.

Their employer, the builder, however, proves to be scarcely more reliable in his ideas upon honest work. For he declares his undying hatred for that ensanguined varlet and man of drains, the local sanitary inspector, as well as of all architects who spoil profits and costs increase.

In contrast to the builder is the earnest architect, who pursues his labours with so little encouragement and amidst so many distractions. One such he thus relates:—

A Town Hall I've built 's just completed;
Some hundreds were asked, I am told,
To a luncheon and duly repleted,
Whilst I was left out in the cold.
There were toasts of unusual dryness,
And the Mayor gave the Prince a gold key,
Taking care to conceal from his highness
The fact it was paid for by me.

It is included in five per cent.,
A key is designed and sent;
And then if they ask it,
A nice golden casket
Is thrown in for five per cent.

Fortunately the assessor is by, and awards generous marks in his favour.

But the villainies of the builder are exposed more fully by his pessimistic foreman, who reveals how he built a cheap cottage at a garden city for 149l. 19s. 11½d. without the drains. There the builder had been much troubled by the difficulty of erecting the chimney-stack, more especially as according to the plans it rested on nothing at all. By a worthy inspiration it occurred to him to make the stack of good stout cardboard, bound at the edges with stamp paper, and nailed to the roof timbers, the final touches being given by a little bit of compo and a dash of red. In doing this he considered he was following the young architect's instructions to encourage any of the workmen who showed a leaning towards individuality and a return to the old crafty methods. When laying the drains no less resourceful economy was brought into play. First a trench was dug, into which a long scaffold pole was placed; this was covered with good stiff clay, and after a couple of days the pole was withdrawn. Nemesis was close at hand, however; though it was not the builder who suffered. To act as a decoy the foreman was told to live in the cottage during the exhibition. He and his wife were sorely tried by the patent combination range and sink, and by the combination plan.

Unluckily, The Purple Patch proves a somewhat erratic assessor, and is absent while this and other damaging evidence is being given against the builder. Indeed, on various occasions he shows himself gullible by the latter, especially when, distraught by the uncertainty as to his acceptance or refusal by Saccharissa, the builder makes many wild promises of (at any rate temporary) amendment. For instance, he says that "Should she but condescend my suit to grant, a house I'll build for her of rare design, which shall be solid, free from damp, with drains of such surpassing beauty, they shall please the most exacting."

Architect and builder have at least one thing in common, and that is a tragic knowledge of the hardness of the times. The architect can say:—

There was a time in days of old
When builders made their weight in gold
And always did what they were told,
And paid out proper wages.

When clients dropped off trees like plums,
And contracts ran to gorgeous sums,
And Rome had then no horrid slums
And bricks were ten a penny.

And builders then were quite content
With something less than ten per cent.,
And no one borrowed, no one lent,
For one and all had plenty.

But this recital does not bring any addition to his marks, and the assessor leaves to consult with Saccharissa as their score is even. He returns and tells the lovers—

She felt your claims were both so just,
As level as could be,
That in the end she felt she must
Decide to marry me.

The caste for the curtain raiser, which was likewise no less than the principals helping to provide an amusing evening's entertainment.

The caste for the curtain raiser, which was likewise written by *The Purple Patch*, was as follows:—

"Mr. Clappit," Mr. Clapham; "Mr. Carveup," Mr. Carvill; "Mr. Scaley," Mr. Dakers; "Mr. Pilkington,"

Mr. Smithers; "Mr. Shovel" (Hon. Secretary Play Committee), Mr. Scott; "Mr. B. Ginner" (Pupil in A.A. De School), Mr. Boutcher; "Mr. Cleek" (Secretary A.A.), Mr. Wontner Smith; "Mr. Burbury" (Assistant Secretary A.A.), Mr. Yerbury; and "Mrs. Ronuk" (charwoman), Mr. Kennedy Smith.

The *dramatis personæ* of "Putting the Best Face Upon It" was:—

The Builder, Mr. W. S. Dakers; his Foreman, Mr. J. Dare Clapham; his Chauffeur, Mr. W. O. Langbein, junr., the Architect, Mr. C. Wontner Smith; his Clerk of Works, Mr. J. B. Scott; his pupil, Mr. Alec Smithers; The Purple Patch (acting as assessor), Mr. G. B. Carvill; with a chorus of bricklayers, carpenters, plumbers, &c.

The music was composed by Mr. Claude Kelly, and the orchestra played under the direction of Mr. Harold Lock.

The programme mentioned that "Mr. J. B. Scott" entirely to blame for the scenery."

THE SOCIETY OF ARCHITECTS.

(Concluded from page 319.)

Ward Blocks.

RIGHT and left of the administrative block are the ward blocks, each not more than two storeys in height and connected on the ground floor only by a broad corridor although a connecting subway is useful, if it is not entirely necessary. There are differences of opinion upon that matter.

The ward blocks should be so spaced that the distance between them is not less than one and a half to twice the height of the blocks. This minimum distance is, I am afraid, not often attained even in some of the finest hospitals especially those in urban centres.

Those responsible for the choice of sites have too often an indefinite idea as to the area required. In the case of King's College, I believe they were advised (not by an architect) that the area required was one acre to every 5 patients. That should be sufficient for ward blocks and administrative offices; but they did not add any additional ground for the large out-patients' department, medical school, &c., and I imagine the same thing happened at Manchester. Once again we have to acknowledge that they manage these things much better on the Continent. Ample space is seldom wanting in French or German hospitals.

We have noted that sunlight and air are the two most important factors in the cure of sickness and disease. These are best secured by adopting the pavilion form of ward and placing the axis approximately N. and S. The east and south walls are thus all exposed more or less to its rays at some period of the day, and every bed-place along the walls has the benefit of sunshine.

I do not know whether anyone has as yet dealt with the relative value of direct and diffused light in sickness, but definite information on the subject will some day have a material effect upon the planning of wards. One gathers that direct sun's rays are the more powerful agent; yet south light, which, owing to the altitude of the sun, penetrates the building to a much shorter distance than east or west, is commonly regarded as the most valuable. We always try to get a good south window into the ward. This is not always obvious in view of the fact that it is a common practice to build wards of exactly the same pattern on both sides of a central corridor, so that the end window in one case faces due north.

Coming now to the internal planning of the ward block or unit, I should remind you that the usual number of patients varies from 24 to 32. The smaller number is more commonly adopted at the present day. The large number was reckoned as the maximum which could be efficiently looked after by a ward sister and her complement of nurses. As in every department of life our work nowadays is more complicated and makes greater demands upon those who serve, it has been found necessary to reduce this number to about 24 as a maximum.

Of this number 18 to 22 may be placed in the main ward, the remainder being distributed in small one- and two-bed wards adjoining.

The dimensions of the wards are necessarily determined by the area and cubic space required by the patients. Apart from fever hospitals, that varies according to the views of different authorities and circumstances. One thousand to 1,200 cubic feet is, I think, the minimum that should be provided in a general hospital, although in the purer and fresher air of the country, seven or eight hundred is really enough if more cannot be afforded. In the latest hospitals, this amount

is largely increased. In the new King's College Hospital as much as 1,580 feet will be provided.

Taking 1,200 as the minimum and the height of the wards as 12 feet, it would allow 100 square feet of area per bed. Twenty-four feet used to be considered a sufficient width for wards, but 26 feet is more general now. They are at times made even wider; but, I think, it is quite unnecessary. With a width of 26 feet each bed would have a wall space of 7 feet 6 inches, which is quite sufficient for most purposes.

It is usual to keep the head of the bed at least 6 inches away from the wall, and this allows a width of 12 feet in the centre for stoves, tables, &c.

Stoves with open fires should always be placed along the axis of the ward; one fire to each 700 feet is enough if hot-water pipes are provided in addition for really cold weather. The question as to central or descending flues is one mainly of appearance. One great advantage of central flues is that we are able to obtain good extraction flues for ventilation alongside the smoke flues.

There are several makes of stoves on the market suitable for wards, but they are not so often used as certain popular and widely-advertised forms constructed mainly in iron and as unsuitable for the purpose as it is possible to be. The best stoves can be and are constructed entirely in brick or concrete, excepting only the grate.

Ward windows have been the subject of much controversy, and the most useful form is a combination of sliding sashes and ventilating hopper.

Great ingenuity has been expended in trying to obviate the obvious disadvantages this window possesses in the way of beads, internal angles, &c.; such, for instance, as making the sashes work in a groove and building the frames flush with the internal surface. But none of them touch the real objection, *i.e.*, the hidden parts of the casement frame. This is very typical of so many so-called sanitary improvements in fittings; all the surfaces and parts open to view are improved and simplified, but those out of sight are ignored.

A short time ago a manufacturer brought me what he considered a new and improved form of inlet ventilator. He showed it to me with unconcealed self-satisfaction and with an air of having brought me the thing for which I and others engaged in hospital work have been vainly seeking. He pointed out the plain enamelled surface of the front devoid of mouldings and projecting hinges (when shut). I think he was grieved when I pointed out that the internal parts exhibited enough angles, wheels, and undesirable areas to harbour any amount of dust and dirt. I mention this because it is so very typical of the principle that when the eye does not see the heart need not worry.

Returning to the subject of windows, it cannot be disputed that some form of casement in solid frames is really the best from this point of view. My personal preference is for a modification of what is known as the Middlesex window, because it was first used at the Middlesex Hospital. At Charing Cross Hospital each window consists of a number of casements hung on centres and closing one upon the other. They are made in teak. At the Women's Hospital, Plaistow, they are made in steel; and this is undeniably the best material.

If I were to deal with all the details of construction of a hospital ward there would be room in this paper for nothing else; and I must content myself with reminding you that the floors should be of solid fire-resisting construction and covered with a non-absorbent, and, if possible, jointless material.

Almost as important as the plan is the section of the ward block. Always bearing in mind that the more sun and air we get in and around the ward the better, it is well in the first place that it should not be overshadowed by other buildings, and, in the second, that impediments to free circulation of air should be avoided.

Tollet, with a logical thoroughness which is truly French, placed his ward blocks on stilts, so that the air should have free passage under as well as around. Recollect that the atmosphere is continually in motion, continually passing up and down, continually being purified and revived in its motion. Check that motion, which is, after all, the essence of life, and it begins to stagnate. Tollet made the mistake, however, of raising his building too high, but only because the administration—forgetting the principle he had in view—found the space beneath the wards adaptable for enclosure as stores, &c. A height of from four to five feet only would prevent this, and still be sufficient to allow the free passage of air. Much less height would render the space difficult to keep clean.

The section of Tollet's wards is very striking. It is practically a Gothic arch; and the centre is not less than 26 feet above the floor line. It provides an enormous volume of air

in the ward; but inasmuch as experiments have shown that there is little movement in air of a room at a greater height than 12 feet, it seems excessive. An elliptical section rising to a height of 14 feet is effective; and I am told that the ward I built of that section at Charing Cross Hospital is the best ventilated of all of them, and the one in which it is easiest to maintain an even temperature at all times. Obviously it prevents a violent deflection of the air entering the wards at the upper parts of the windows and ventilating inlets, and eases the passage of air up to the extract flues in the roof.

We will now consider the ward adjuncts.

Bath Rooms and Lavatories.

The position of bath rooms, lavatories, and conveniences varies in practice, but it is most usual to place what are quaintly called sanitary towers at the extreme end of the wards jutting out at the corners. I do not think it an ideal position, because, for one thing, it is just at those points that we are able to get the most and best sunlight which these towers necessarily block out.

Mr. Aldwinckle, at the Brook Hospital, placed these offices in a tower leading out of the centre of the ward, and this plan has its advantages from some points of view; but, on the whole, it seems that a better position (especially in a short ward) is at the lower end of the ward adjoining the ward kitchens, &c. This leaves almost all the outer wall surface and windows of the ward itself exposed to the sun without interruption.

It is most usual to place the baths in one of the towers, but this is, I venture to think, entirely unnecessary from a sanitary point of view; and they are more conveniently placed adjoining the kitchen and offices. In this way it is possible to make the towers of small dimensions—a matter of great importance, in view of the obstruction they form to the light and air of other parts.

For this reason too, and another, it is better to put the ward conveniences in one tower and the nurses' sink room in another. The other reason is that the nurses' work (at best not the most pleasant) is rendered easier and more agreeable. The special convenience for the use of nurses may also be well placed in the sink-room tower. It should contain separate sinks respectively for emptying and cleaning bed-pans without unnecessary handling; and also a long, wide, and shallow sink for washing mackintoshes. Also a small cupboard for preserving specimens of excreta for examination. This can be well placed in the thickness of the outer wall, and it should be thoroughly ventilated.

These towers are separated by cross-ventilated lobbies from the ward.

The air which is abstracted from the ward by open fires and flues must be replenished from the outside; and it will be drawn most freely through the openings which offer the least resistance to its passage. That may easily happen to be through the sanitary annexes; and it is of course the function of the cross-ventilated lobby between the annexe and the ward to obviate this. Care must be taken that this lobby is not a mere flue between them, and that can only be done by making the passage of air in the lobbies easier than in the annexe. It is possible to make the extracting power of the annexe stronger than that in the wards, so that the draught is away from, rather than towards, the wards.

Although I do not propose to deal at any length with the question of ventilation, I must state the general principles as applied to wards, because it has a bearing on the particular form of the pavilion block.

In the first place, I think it is not unknown that I abjure all forms of mechanical ventilation, and it is with no little satisfaction that I find that medical men as a rule are emphatic in their preference for what we call natural ventilation. Ample and efficient ventilation can be secured in this country by means of open windows and air inlets.

In the treatment of consumption it has been found that unlimited fresh air is one of the most important factors; and it is now recognised that it is equally valuable for every other disease. I think it is not too much to say that even the doubtful freshness and cleanliness of the air in cities is better in excess rather than in small quantities. In other words, have plenty of air in the wards, clean and fresh if you can, but if you cannot, at any rate have as much as you can of the best available supply. I am not suggesting that air is not best when cleansed of all dust and dirt, but until we can secure this by more simple means than machinery and long dark flues, we are better off as we are.

In most mechanical schemes the engineer cannot resist the opportunity of combining the heating with ventilation, *i.e.*, by delivering the air into the wards warmed. Those who can

enjoy and thrive in warm air love also sterilised water and other lifeless things. The majority of us prefer and thrive better on air and water as Nature supplies them.

In placing the windows directly opposite one another we can at most times get a gentle flow of air from one side to the other. This is the case even on the stillest day, because the temperature on any one side of a building is always greater or less than on the others, and as we know movement of air is caused entirely by the differences in temperature.

In rough or cold weather we have to rely more or less on the inlet flues which are placed—one to each bed—in the outer walls. They discharge into the ward about three to four feet below the ceiling level.

A little air may also be introduced at the floor level, the inlets being so placed that it impinges on and is slightly warmed by the radiators or hot-water pipes. This helps the general circulation of the air. An inlet or inlets may also be placed with advantage in connection with the central heating stoves.

Very important is the provision for extracting the foul air which is given off by the patients. The most powerful agent in this direction is the open stove, but strong extraction flues at the ceiling level are of equal importance, and an induced current is valuable.

The golden rule is to have plenty of air, fresh and cold, but not too cold for reasonable comfort, and to keep it gently moving.

Day Rooms.

Day rooms for patients cannot be considered essential, but they are desirable. They are most often placed adjoining the kitchen and separation wards, where they can be kept under better observation by the staff. Much, however, may be said in favour of placing them at the extreme end of the ward, where, with abundance of window space, they form veritable sun rooms. It is desirable that they should have conveniences adjoining. (You may see by reference to the plan of Willesden Infirmary, that I placed the day rooms in this position, and that the sanitary towers are so placed as to serve them as well as the sick wards.)

Scullery.

The ward kitchen or scullery is an essential part of the ward unit. It need not be large if the door and window fittings are conveniently placed. A deep sink is provided with drainer boards and plate-rack. Also a small cooking stove—preferably a gas range—for keeping food hot.

Separation Rooms.

One or two small rooms are very desirable to accommodate noisy patients or those for whom absolute quiet is essential. In a large hospital it is usual to provide one such room for two patients and two for one each.

Linen Store, &c.

To complete the ward unit we require a linen store room, broom cupboard, patients' own clothing room, and a small pantry.

For these space can be economised by providing a small cupboard in the outer wall of the scullery for food storage; cupboards along one side of the passage leading to the ward for linen, &c., and a cupboard in the kitchen for brooms, pails, &c. I prefer that the latter should not be placed in a closed space at all. They can be neatly hung on the wall of the kitchen. Cupboards are so handy for hiding dirty things.

Patients' own clothes should, however, be placed in a small room fitted with steel lockers, pegs, &c.

Ward Sister's Room.

In large hospitals a room is generally provided for the special use of the ward sister, but it should be in no sense a sitting or bed room. It should be more in the nature of an office.

The life of a nurse, as I have said, is very hard, and indeed only the strongest women can undertake it. Every consideration possible should be shown to them, and ample opportunity for rest and recreation, but not in or about the wards. We may hope one day to reduce their working hours to eight, and then we shall be able to employ many who have every virtue and capability for the work, but are now prevented from following the vocation by lack of the necessary physical strength.

Staircase and Lift.

If the ward block is of more than one storey, a staircase and lift is of course necessary.

The stairs should not be less than four feet in width and

with an easy rise, say 6½ inches, with an 11-inch tread. No winders should be allowed.

The lift should be large enough to hold a bed and two nurses or attendants.

It is desirable that the staircase should be cut off by a corridor or cross-ventilated lobby from the wards and adjuncts, so that the air from the lower ward may not be able to ascend to the one above.

Conclusion.

I fear I have treated this very large subject in a very inadequate manner, and in condensing my description I have omitted many matters of importance, but I may at least claim this virtue for the shortness of my paper, that it leaves time for discussion, which is, after all, the essence of these meetings.

Mr. Saxon Snell concluded the lecture by pointing out the special features of the plans exhibited, many of which had been lent by distinguished architects who have made a special study of these institutions.

Mr. H. FREYBERG, in proposing a vote of thanks, remarked that Mr. A. Saxon Snell's work was known to all of them. He could not help saying that if the laws laid down in that very excellent paper with regard to sanitary building construction were carried out to the letter, there would be very much less need for the large hospitals about which they had heard that night. There was only one technical point he would like to raise, and that was with regard to the regulation of the temperature of the air admitted to the wards. The lecturer had talked of its being slightly warmed at the hot-water coils; and it would be interesting to learn if there was any checking of that. It would also be interesting to know if at the Charing Cross Hospital there was any form of filtration of the air as it was admitted, and, if so, on what lines it was carried out. Some of them had been present at a meeting of the Sanitary Institute a few days before, when they were deploring the way in which buildings generally were being cramped, most especially in connection with suburban building estates. It was a pity to hear that the same thing occurred to hospitals. He could only hope that the time would come when they would see that any buildings—whether hospital or domestic—would have sufficient air space around them.

Mr. C. WATKINS, speaking as one of the workers in a hospital, endorsed what Mr. Snell had said. No reference had, however, been made to a disinfecter. It always seemed to him that there should be an observation ward in a hospital for those casualties which are brought in, but which don't require attention at the moment, and are able to leave again in four or five hours. Unfortunately, the architect was sometimes greatly troubled by the amateur committees who don't know anything about the subject, but who attempt to guide him and tell him what to do. Sometimes, in addition, architects have to try and satisfy the medical staff, who differ among themselves, and each of whom want their own fads carried out.

Mr. G. A. T. MIDDLETON, A.R.I.B.A., spoke of the difficulties as to temperature in hospitals constructed in the East and hot climates generally. In a hospital he had designed for erection in Syria it was very hot in the summer and extremely cold in the winter.

Mr. C. W. BALL considered that as the paper was somewhat short it was wonderful how Mr. Snell had got so much information into so short a time. The subject was a big one, and many people could write a paper on, say, the hospital ward alone.

Mr. A. SAXON SNELL, in reply to the discussion, said he did not think any architect could design a hospital by himself; he should go to those managing it to ask them what they wanted. It had to be learnt that the temperature of a room was an important factor in the recovery of the patient.

SEAL v. HUNT.

IN the King's Bench Division on May 29, Mr. Justice Phillimore gave judgment in the action *Seal v. Hunt*, in which Mr. Samuel S. Seal, of Elstree, Herts., sought to recover damages from Mr. Geo. H. Hunt, architect, London and Evesham, for loss said to have been sustained through alleged professional negligence on the part of the defendant in connection with the building of a house at Elstree. The complaint of the plaintiff was that the defendant caused the house to be constructed so that the ground floor was below instead of above the natural level of the ground, contrary to the approved plans, and the defence was that the house was built in accordance with plans shown to and approved by plaintiff.

His Lordship, in giving judgment, said that on the conclusion of the hearing of the case he had formed an opinion adverse to the defendant, who was charged by the plaintiff with breach of duty and breach of contract. He, however, did not give judgment, as he thought he ought to personally inspect the house at Elstree in order to see the nature of the site, appreciate the difficulties the architect had to meet, and see if there was not more to be said for him than appeared from the evidence given in Court. He had accordingly visited Elstree and the inspection did not now enable him to change the opinion he had formed. In his judgment Mr. Hunt acted carelessly, as he did not sufficiently give the plaintiff an appreciation of what he would term the geometrical aspects of the work. It appeared that Mr. Seal, on dismissing Mr. Hunt, employed another architect, who had to raise the house and reconstruct it three feet higher, and the defendant must bear responsibility for this. In view of statements that had been made as to the extra expenditure in which the plaintiff had been involved, he had decided to enter judgment for him for 465*l.* and costs.

WORCESTER COLLEGE, OXFORD.

By the Rev. S. H. W. HUGHES-GAMES, M.A. (formerly Scholar of Worcester College).

IN a former paper we briefly recounted the history of Worcester College; it remains to add some further details which may be of interest.

Immediately to the north of the present buildings, along Walton Street, is the old monastic gateway, now opening into the Fellows' Garden. In LOGGAN's print of 1675 this gate may be seen; and beyond it a lane, leading by the back of the old "camerae," or monastic cells. This gateway, surmounted by two shields, is from the outside the most noticeable sign of the twofold history of the College—a reminder of the real origin of the College—and of the time when all learning was confined to the Church.

As we pass through the iron railings, given by a former Provost, Dr. COTTON, and in by the modern doorway, to the right hand we find the stately architecture of the eighteenth century, to the left the more modest and picturesque handiwork of the fourteenth century. In dumb symbol the diverse spirits of both seem to stand facing one another—the middle ages, with their poverty, their devotion, their wonderful instinct for architectural beauty, and the classic and somewhat cold and irreligious days of Queen ANNE and the early GEORGES, embodied in stone, with but a strip of green sward between them. I do not know anywhere in England—at Oxford or at Cambridge—where we can get precisely the same effect. I think to all old Worcester men, and possibly to many others, the quadrangle must always seem one of the most interesting and picturesque spots on earth.

And the details are not unworthy of their setting. The four features of the College, as it now exists, which naturally claim attention are the gardens, the chapel, the hall and the library.

There are two gardens—apart from the Provost's Garden. The Fellows' Garden is not usually open to the public; it possesses a disused open fives court; it lies to the north of the College, and is rather sombre in winter but cool in summer. Except for strolling in after dinner during the summer term the Fellows, so far as I have ever seen, do not use it much.

The public garden to the south of the College, on the other hand, both in summer and winter, is seldom free from visitors. No other college garden in Oxford boasts of a lake; hardly any is more admirably wooded and planted. Much improvement in the planting has been effected by the present Bursar, Mr. LYS.

The site was purchased from Mr. THOMAS WRENCH in 1741 for 850*l.* Until 1827 the garden was little more than a water meadow. Mr. RICHARD CRESWELL was in 1827 Bursar of the College, and it is to him that the present arrangement of the garden is due. Along by the lake, and parallel to the canal, a shaded path leads to the Provost's Meadow, lately converted into a playing-field

for the use of the undergraduates. And now this is encircled by an excellent pathway.

In the garden to the east side is a covered fives court, built about the middle of the nineteenth century by the Senior Common Room, for the benefit of the junior members of the College.

With its playing-field, its fives court and tennis courts all close to, Worcester College is in one sense the most privileged of the colleges in Oxford. No other has so many external advantages, conveniences and amenities.

An excellent pavilion, subscribed for by former and resident members of the College, was opened on June 25, 1900, when a cricket match was played between past and present members of the College. The "Past" were captained by the Rev. E. S. CARTER, who in 1867-68 both rowed and played cricket for the University. Owing largely to his excellent lob bowling the "Past" won the match very easily.

The Chapel.

With the possible exception of the Cappella Palatina at Palermo, there is no chapel in the world, as far as I know, so rich in symbolic detail as the chapel of Worcester College. The building, commenced in 1720 and decorated in 1864 and the following years, is of singularly beautiful proportions. The decoration—designed by the late Mr. BURGESS—was effected at a cost of more than 7,000*l.*, and represents the whole scheme of Redemption, in type and prophecy, in preparation and fulfilment.

At the angles of the central dome in the ceiling are represented four kings from whom Our Lord traced His ancestry—DAVID and SOLOMON, HEZEKIAH and JOSIAH. On the eastern side of the dome the Fall of Man, the three theological virtues, with the fourth, Humility, are pictured, and on the western side the expulsion from Eden, and the four cardinal virtues—Justice, Temperance, Chastity, and Fortitude.

The windows, designed by Mr. HENRY HALLIDAY, on the north side represent the Annunciation, Our Lord with the doctors in the Temple, and the women at the sepulchre.

On the south side are portrayed the Baptism, the Offering of the Wise Men, and the Ascension.

Over each window are half-length representations of the prophets who are supposed to have foretold these several events.

In the four niches at the angles are statues of the four Evangelists.

The Benedicite and the Te Deum furnish the scheme for the decoration of the walls and the finials of the stalls.

On the floor is represented Man's Restoration—the Sower and his Seed, the Saints and Heroes, Doctors and Preachers of the Western Church, and of the Church in England.

The alabaster lectern was the gift of the scholars; the lectern Bible, with its silver binding, designed by Mr. BURGESS, was the gift of the present Provost when Bursar. And it may here be said that, during his lifetime and connection with the College, all the immense improvements in the decoration of the chapel and hall have taken place.

Other features of the chapel are the beautiful candelabra, two of alabaster and six of bronze, given, the alabaster ones by Dr. COLLIS, the others in memory of a former fellow commoner.

No one who visits the chapel should fail to notice the exquisite finish of the carving on the stalls, and, indeed, of the whole scheme of decoration. There is not one bit of slovenly work either in the conception or the minutest detail of its realisation; the craftsmen who wrought all this are nameless, but their work is worthy of all praise.

The Hall.

The decoration of the hall is also due to Mr. BURGESS. The east window represents banqueting scenes from

HOMER, VIRGIL, SHAKESPEARE, and MILTON, somewhat at variance with the modest repasts and decorous demeanour usual, and in fact invariable, at the high table underneath.

There is a handsome marble fireplace; and the richly panelled woodwork is inlaid with the armorial bearings of various members of the College, who contributed to the cost of the decoration.

There are some fine and some indifferent portraits. The portrait of the present Provost was one of the last, if not the very last work of the late C. W. FURSE, a most gifted artist who died all too young. The portrait, though not finished, is distinctly impressive.

The Library.

The library extends the whole length of the front above the cloister; it is of fine proportions, and larger than most college libraries.

Mr. PHILIP PUSEY, nephew of Mrs. COTTON, wife of a former Provost, presented some fine casts from the antique; the library is rich in works on architecture and classical archaeology. A valuable collection of pamphlets of the period of the civil wars, volumes of LAUD pamphlets, PRYNNE pamphlets, and a collection of old English plays, all presented by Dr. CLARKE, are of the greatest interest and value to the historian. There is a MS. "History of the Black Prince," in Norman-French, the final lines of which are on the monument of the Black Prince in Canterbury Cathedral; and a series of designs for Whitehall Palace, executed probably by INIGO JONES or one of his pupils, along with a copy of PALLADIO's work on Architecture (1601), the margins filled with annotations by INIGO JONES, are of special interest to the architect and artist. CARLETON'S "Thankful Remembrancer of God's Mercy" (1627), bound in velvet, and adorned with gold lace and seed pearls, should be seen.

The Men.

Alas! Worcester College, or Gloucester Hall, has produced few great men, as the world counts greatness. Yet from Gloucester Hall came Colonel LOVEFACE, and from Worcester College DE QUINCEY. "To Lucasta, on going to the wars," "To Althea from prison," "To Lucasta, on going beyond the seas," are three of the most beautiful love lyrics in the English language, and contain lines which everybody knows:

"I could not love thee, dear, so much,
Loved I not honour more."

"Stone walls do not a prison make,
Nor iron bars a cage."

Who has not heard them? They are part of the heritage of England.

And DE QUINCEY—is any prose more musical, more various, more subtle and strong and eloquent than his?

And yet the lives and careers of these two men—the favourite alumni of a favoured college—were dark with calamity, with sorrow, with weakness.

Worcester has, however, produced a few Colonial Bishops, and even a suffragan—and one at least territorial Bishop—a Welsh one. So it need not despair.

ILLUSTRATIONS.

ST. MARGARET'S, KINGSWOOD, SURREY.

THE illustration shows the garden front of a small house built of stock brick with cement rough cast. The plinth and chimney caps are purple-brown Crowborough bricks, and the roof is covered with dark-red hand-made tiles. The principal rooms face south, and the entrance is at the north-west. The entrance doorway is of Weldon stone and the door of Austrian oak. English oak has been used for the verandah posts and constructional half-timber work. The house is simply finished inside, but there is a certain amount of panelling, and the principal chimneypieces are of oak. The ground floor is of wood blocks.

Mr. H. P. Burke Downing, F.R.I.B.A., is the architect, and the builders are Messrs. G. P. & H. Barnes, c Streatham Park, S.W.

MEMORIAL TABLET, KNARESBOROUGH CHURCH.

THIS tablet, as will be seen on referring to the illustration, was erected in memory of Dorothy Slingsby, c Scriven, who died in the year 1673. It is an excellent example of the work of that period, and is executed in white marble, with the exception of the small corbel at the bottom, which is a restoration in stone. The tablet is placed at a height of about five feet from the floor, on the east wall of the Slingsby (now spelt Slingsby) Chapel. It is four feet six inches high by two feet six inches broad. There are several other monuments of great interest in the same chapel.

The drawing by Mr. E. H. Gibson was awarded a prize in the February competition of *The Architect Students' Sketching and Measuring Club*.

PANEL FROM HENRY VII'S TOMB.

THE tomb of Henry VII. and of his queen was the work of Torregiano, the Florentine. It was begun in the year 1512, but was not completed until 1518. In his curiously worded estimate he undertook to "make well, surely, cleanly workmanly, curiously and substantially, for the sum of 1,500*l*. a tomb of marble, with images, figures, beasts, and other things of copper gilt."

The drawing by "Plato" was awarded a prize in the February competition of *The Architect Students' Sketching and Measuring Club*.

OXFORD COLLEGE SERIES.—WORCESTER.

WE continue this week our illustrations of Worcester College, a further descriptive article on which appears above.

THE Royal Sanitary Institute proposes to hold an exhibition of Sanitary Apparatus and Appliances in the Ulster Hall, Belfast, from July 24 to August 2 next.

THE Newcastle Art Gallery Committee, which recently decided to again ask the Council to accept the bequest of the late Mr. J. A. D. Shipley of pictures and 30,000*l*. for an art gallery, have decided to recommend the Council to authorise the erection of an art gallery adjoining the present Laing Gallery.

PLANS are being prepared for a telephone exchange for the New York Telephone Company's long-distance switch board. The exchange will be the largest in the United States. It will provide employment for 200 operators, and the outset will have accommodation for 20,000 subscribers. The building is to be of 15 storeys, but will ultimately be increased to 25 storeys.

THE Southampton Board of Guardians have agreed to the erection of two pavilions, the extension of the nurses' home, and the making of other alterations and additions to the Infirmary of the Union at Shirley Warren, at a cost not exceeding 18,298*l*.

A POPULAR and handy volume describing the historical buildings of London, with adequate illustrations, is not as yet procurable, nor has the wealth of architecture, which is in the possession of London, been focussed so as to show its connected development and full significance. Mr. B. I. Batsford will shortly publish a volume, the object of which is to supply this need and furnish an interesting guide for the use of visitors as well as Londoners. It has been written by Mr. Walter H. Godfrey, an architect whose work in connection with the London Survey Committee is known to many. The volume will contain maps and a descriptive guide to the buildings, and will be issued at a moderate price.

THE Local Government Board have approved of a scheme of sewerage and sewage disposal prepared by Messrs. D. Balfour & Son, civil engineers, of London and Newcastle-on-Tyne, for the parish of Adwick-le-Street, in which is included the model village of Woodlands in the district of the Doncaster Rural Council. The sewage from a portion of the district is to be pumped from a storage tank by means of electric motors and pumps to the disposal works, where it is to be treated in open liquefying tanks followed by double filtration through percolating filters, the effluent from which will be discharged into Bentley Dyke. The Local Board have approved the scheme of main outfall sewerage prepared by the same engineers for Norton, Stockton-on-Tees.

AMERICAN ARCHITECTURE *

By FRANK M. ANDREWS.

THE art of architecture in any country finds a twofold source from the architectural tradition and the moral and intellectual character, political organisation, and mode of life of its people. To trace intelligently its development and artistic worth, these broad conditions must be accounted for.

Unlike the sister arts of painting, music, and sculpture, it cannot be detached from the masses, for it is not a creature of the museums or of the private collector, nor of the exclusive patronage of the favoured intellectual few, isolated as a thing apart, to be sought out and found in order to be felt and understood.

Contrary to these, it is the serviceable and intimate art of man, insistently a part of his familiar daily routine, a creature of his needs and circumstances, arousing in even the most heedless a consciousness of its existence and its power of expression either of beauty or of ugliness. For this reason, architecture artlessly becomes an inevitable exponent of the characteristics of the people it serves, and the unerring index of their time and epoch.

The wisdom of the Greek philosopher was the intellectual flower of the human race, belonging to all mankind, but the architecture of Greece expressed the genius of the Greek alone, indicating the antecedents, environment, and soil which nourished and made possible the Greek philosopher. The Gothic cathedral, the feudal castle, the walled town, the monastery, and the vanished hovel of the common people told the story of mediæval times, of the great religious movement and the feudal system of the Dark Ages, with its cloistered learning, its strong arm of military and exclusive political might, and the subserviency of the masses. Again, the readjustment of these conditions, the resulting dissemination of learning, and the establishment of political and religious freedom, are faithfully reflected by the architectural development that kept pace with it throughout Europe.

In this brief allusion to a period momentous in its importance to the development and uplifting of the human race, I am touching upon matters entirely familiar to yourselves, yet which I wish to emphasise in order that you may appreciate that a discussion of American architecture must necessarily be approached with a similar regard for its political and civic development.

What I have to present to you deals with, perhaps, one hundred years of antecedent history, and with not to exceed four decades of a subsequent movement that possessed any degree of architectural significance to others than ourselves, and yet as unerringly as in Europe we have recorded, in the terms of our art, the forward movement of our people.

Our land, colonised from England, Spain, France, and Holland, drawing to it ever since a population from most of the peoples of the globe—a land stretching from ocean to ocean, having climatic conditions ranging from those of Norway to those of Northern Africa—with its mineral, agricultural, and other natural resources sketched in with a broad and lavish hand, was in its inception and early history notable for its isolation. This isolation was not only geographical, but is reflected in a political system that is intensely and jealously individualistic, the keystone of its fabric being personal freedom and independence. As a new star in the firmament of government, it was peculiarly jealous of its own orbit, and largely justified its being by its very indifference to all European influence, fearing that therein lay discord and entanglements dangerous to the common welfare. Clearly the fundamental concept of this new government was the abandonment of the established European order of things, with its habits, customs, traditions, and conclusions, in so far as human determination could effect it. Pomp and display, class distinction and the exaltation by rank or otherwise of an individual or group, which in Europe played so important a rôle in the development of its civilisation, were not to find place in this new scheme of things, and, as a natural corollary to it, almost the entire vocabulary of architectural thought was automatically abandoned.

Therefore we find in early times but a trace of the interesting and inherent architectural beginnings such as were characteristic of Egypt, Greece, Rome, and the various European nations, nor do we find a place for a receptive disposition towards those architectural types which at that time prevailed throughout Europe, as its expression of the power and importance of government or of a class.

A timid concession to traditions, which could not be altogether denied, we find reasonably applied to the first structure of the national capital and in the executive mansion at Washington. That these structures should owe their existence and excellence to the interest of Washington and Jefferson, and to Hamilton, the locating of the capital itself gives to our most important architectural effort of the time a personal significance, corresponding to their influence in the affairs of our Government. Throughout the Colonial period we find in New England and in Virginia, with its sister States, a faithful adherence to the manners and customs of the Mother Country, its architecture consequently that of the coincident Georgian period of England, and the word for it in our architectural vernacular, "Colonial." With us an architecture of brick and wood, severe, simple, and with a certain refined stateliness, owing to its existence as a precedent to the influence of our then leaders of thought and action, and merely reflecting their point of view, it ultimately became only a mode or habit of construction without architectural force or vitality. Its earliest and best examples, preserved by a fortuitous circumstance throughout a century of neglect and indifference, became in the end a helpful educational influence pointing towards the true path of artistic excellence; a cudgel with which to belabour a heedless utilitarian public but too prone to an inartistic display of its swiftly-acquired wealth, and to awaken its artistic conscience.

Again we rediscovered the rare beauty, quiet strength, and world of suggestion in the old Spanish missions of southern California and the south-west. Glowing with artistic spirit, in their extreme isolation from the then civilised world, they seem a miracle of accomplishment. They are the product of minds who loved art, and remembered it as of the land of their birth; but, forced by environment and conditions to a fortunate simplicity, they preserved and created for the admiration of our future generations the essence of all that is good in the architecture of Spain. To-day this work is a powerful source of inspiration to the prosperous people of all that region of the United States where these good old mission fathers did their work of civilisation, leaving behind them evidence of their love of the beautiful. These, then, were the slender links that united us with the ancient architectural forms, and while they were not inherent nor endowed with a spontaneous expression of ourselves, nor an indication of our future development, they, for the moment, served as a borrowed garment, fortunately a good one.

The story of our departure from these standards, and the subsequent period of artistic squalor and ignorance, which I may refer to as our architectural Dark Ages, was one, however, not of wilful ignorance nor purposeful neglect, but of a condition.

It is the story of these people isolated by a great ocean, and by the greater intellectual ocean of abandonment of European traditions and ties; with the great task of solving an experiment in Government on a huge scale; with a vast wilderness to subdue and render serviceable to man; with the problem of assimilation of an influx of foreign population possessed of alien thoughts and customs; of a country that, as a whole, may be likened to the pioneer settler whose log-cabin is reared quickly out of the immediate material at hand for convenience and shelter only, so that he may the sooner set about the task of clearing his land and gaining his livelihood. Should accumulated wealth later bestow upon him or succeeding generations its independence of labour, and the opportunity to cultivate the mind, he may then observe the stored wisdom of history, and bow to its influence and tradition.

Therefore in our country, in this condition to which I have likened it, we find the Colonial type of domestic architecture principally interpreted, not by architects nor under an artistic impulse, but by the builders of the period whose personal vagaries and idiosyncrasies more and more overwhelm the meagre examples of this authoritative style. Throughout the country, and for the greater part of the nineteenth century, these conditions prevailed, for we cannot take as essentially typical the attenuated architectural movement, if it may be so described, that was discernible in a few of our more important sea-board cities. Broadly speaking, the entire scheme of things involved no application of artistic code or principle, but was merely the product of the builder-craftsman. In the older portions of the country we find the more important structures reared of brick and stone with a generally prevalent application of our own peculiar system of wood-construction to domestic requirements. Throughout the middle west, in Ohio, Michigan,

* A Paper read before the Royal Society of Arts on May 24.

Indiana, Illinois, Wisconsin, and all that region west of the Mississippi River, the saw-mill was king and the carpenter-builder its faithful apostle and exemplar. The strictly utilitarian held sway, and the rapidly-increasing population of this region had neither the time nor inclination to consider such matters as art nor the refinements of a wealthy and settled community, and thus there became impressed an habitual habit of thought which stood for years as an obstacle to artistic growth and development. Buildings were an object of pride, and aroused interest and appreciation only because they expressed in size, materials employed, and in numbers, the growth of a community or the prosperity of the individual. These structures, with here and there a reminiscent architectural detail, usually crude and illiterate, were devoid of architectural sense of meaning, as were the people themselves of a proper understanding of the codified systems of artistic thought.

In this connection it does not appear to me that it is logical nor permissible to trace the course of that spark of architectural knowledge which moved onward from the early Colonial days, revealing itself from time to time in isolated instances throughout this period, and claim that its description is the story of American architecture.

Personally, I prefer to deal with that which in its broader sense arises from the people, as with the seed that is sown with Nature's forces working invisibly and within, until, under favouring conditions, its growth and full flower appears. Despite their apparent indifference to artistic feeling and their devotion to material development, these people held within them the seed of art, and during this period its germination and hidden growth was sure, awaiting but the bursting of a materialistic envelope to blossom into a keen love for and appraisal of the value of beauty and art to mankind. Manifestly this must be true of them since there were no kings, nobles, nor courts to patronise the arts, nor leaders of thought who could arbitrarily establish an artistic movement. The accomplishment of this could only be through the gradual dissemination of knowledge of and love for the beautiful throughout a people concentrated on practical problems, until they, in a unity of thought and action, should respond to the resulting impulse, thereby making possible an architectural epoch in their history.

It must be borne in mind that we are dealing with the development of architecture within a democracy, describing a movement probably without a parallel in the history of the art. Republican Venice in its day of commercial supremacy had her traditions of Rome and Greece, an old order of things to build upon, and an unavoidably inherited environment not of its own creation; of an artistic bequest authoritative in its derivation, and certain of itself.

We are dealing with a nation in which no individual could so dominate as to become a mainspring of artistic action, a nation so wedded to the formula of democratic simplicity that he who would lead must become its consistent votary, a nation that expressed this habitual attitude architecturally by its wholesale neglect of the artistic excellence of its public buildings of this period.

Passing over the time of the Civil War, the reconstruction days, and the panic of 1873, we find architecture at its lowest ebb concurrently with the renewal of the energetic development of railroads and of other fundamental industries, a consequent rapid increase in accumulated wealth, and of the power of the individual as well as of communities to assert their importance by a material display. The individual respected no architectural authority, save that of his own taste, under the guiding influence of the carpenter-builder. The architect was a negligible quantity, a mere speck in the background; and, in fact, the name had small significance except only when applied to the builder. An architect was a dubious being at best, who insistently expounded impracticable and useless theories about art and other effete things of European origin that were quite inimical to the interests of the local dealers, building trades, and their political henchmen. These were the controlling influences, and this was the day of diluted East lake and whimsical variations of Victorian Gothic, of jig-saw ornament, and of cast-iron tortured into night-mare semblances that to this day can scarcely be traced to their remote ancestry even by an expert. Under this authority, and with this vernacular, the residential architecture of the time was created, and cities and states so announced their power and importance in their institutions of learning, their capitals, court-houses, and other public structures.

Thus we have before us the spectacle of democracy, with its growing newly-acquired wealth and leisure, embarking without rudder or compass to range aimlessly the broad un-

familiar stream of traditional art. Many souvenirs of this extraordinary excursion still remain with us, but, fortunately, the greater portion of the work of that day has vanished, to make way for better things. The climax of this era occurred in the exhibition buildings in 1876 in Philadelphia, and the greater part of the succeeding decade was required to mark its fall.

As a youth, the writer witnessed the fulness and the decline of this period, the beginning of the reform movement, the rising appreciation of proper standards, the sure but slow education of popular interest and taste, until to-day it may be justly claimed that the fundamental elements of our peculiar American type of architectural expression are discernible. Its precise formulation may not yet be possible, but it is a vital and growing thing, plastic, perhaps restless and unsettled, yet reflecting our rapidly-crystallising characteristics as a people. As an art, it has unquestionably found itself, and its underlying purposes and tendencies are capable of analysis and discussion. In method it is bound to no exact tradition nor architectural style, but does acknowledge the underlying principles and authoritative precedents that energeise them all. For the present it is transitional in character, and, as to detail, is essentially an architecture of adaptation, wedded, as I have said, to no particular style, but seizing for the purpose at hand any suitable architectural form that applies to our situation and environment, but controlled by a trained art intelligence.

The thin skirmish-line of architects—which stretched across this artistic wilderness from the century of Bulfinch, Hogan, L'Enfant, and others, to the century of Hunt, Root, Richardson, and their contemporaries, men who bravely maintained their loyalty to artistic purity and devoted pursuit of art under all discouragement—has now broadened into an army of architects and artists, the product of schools of art and architecture both at home and abroad. These men are inspired by exceptional opportunity and an appreciative public. In their numbers, and the power of their collective influence upon the civilisation and development of their country, they exceed that of any similar group of men of a single generation to be found in any recorded period of the world's art development.

Here, then, we have the interesting example of an art movement rather typically American, wherein the love of the beautiful and the desire of its intelligent expression is not due to the stimulus of the patron towards the artist, but, on the contrary, has flowed from the artist to the patron, or, rather, from an entire group of artists to an awakening public. Democracy having solved its fundamental problems, now encourages intellectual and artistic growth with a lavish patronage, that in its aggregate volume and result will some day be viewed with deep interest by the world at large. Even from the standpoint of historical analogy, the forces are at work and the material exists out of which to fashion this result.

The entire material equipment of this country which served its purpose throughout a period of transition and development must be, and is being, recreated in permanent and enduring form, thereby affording an extraordinary volume of architectural opportunity. A practical people, accustomed to quickly grasping and solving broad problems by concerted action, they have realised that beauty and art is a vitally important thing, and that to be acquired as a national asset their guidance and direction must be assigned to that group of men whose training and experience entitle them to it, and whose active propaganda are but reflected by this conclusion.

The educational influence now at work within us is as wide as the nation itself, proceeding primarily from the group of men referred to, also from schools of art, which are to be found in every important city in the land, from the regularly-established schools of architecture in our various colleges and universities, from the active and alert efforts of the lay Press, and the intelligent and interesting art-criticism and discussion of the popular magazines and the technical journals of the profession.

In this scheme of education Europe may be regarded as one great laboratory, in which the practical application of the theories and influences of this educational movement are tested and applied. The thousands of Americans who, year by year, cross the Atlantic and travel about Europe have regardless of their immediate motive, both consciously and unconsciously, absorbed the spirit, the grandeur and nobility of its artistic achievements, and have at last perceived that besides the material wealth of a country, there must be a spiritual and intellectual wealth which art alone can express, and without which no nation can be truly great nor the full fruition of a people's destiny be accomplished.

I believe these influences have resulted in a public sense of discrimination and a sound professional analysis of the art and artistic influence of Europe, and from this I reason that there will ultimately appear in America a characteristic American style that will be grounded upon the verities of architecture, sincerely expressing the organism, use, and purposes of our structures, yet not insisting upon the forced and unnatural adaptation of motifs and detail in archaeological reproduction of other styles not suited to ourselves. The day has passed in my country when the ideas and so-called originality of the individual is to be tolerated as a worthy substitute for the time-honoured forms and concrete conclusions which represent the cumulative authority of the many minds of the past striving for truth and beauty of expression.

That our growth and development will be to a large degree homogeneous is to be expected, because of the ease of intercommunication and consequent habit of travel between our various states and cities. While interesting variants may appear, due to the Colonial influence of which I have spoken, there will be none of those phenomena that have in the past arisen from restricted intercommunication, isolation of cities, division of languages, and customs which so strongly individualised and restricted the art and thought of European groups, and which so comprehensively affected the formation of its various styles of architecture. Speaking of one language, and existing under one government, with facile and established habit of intercommunication, we are not subject to, in any given locality, the possible provincial outlook nor the requirements of local materials or customs peculiar to that locality, as in Europe.

Undoubtedly the greatest, if not the primary, stimulus of the present artistic development of the United States is to be found in the Columbian Exposition of 1893 in Chicago. It was here that the profession for the first time found itself in possession of a theme monumental in its scope and dignity, and of that peculiar quality and complexity which put it beyond the capacity of the layman or of the builder to control; resulting, therefore, in its assignment to a profession now become powerful enough to assert its right to assume direction within its own domain. The initial moment in our art history that required the united action of a group of properly-trained men, it was the first time when they had to deal with a problem in which architecture was the dominant factor; recognised as the visible and vitally-important expression of the dignity and scope of the enterprise. The interest of a great public was to be aroused, and a situation of charm and beauty was to be created as a functional part of the display itself, and for this purpose the business men in charge perceived that good architecture was indeed a practical necessity. For the first time the ability of architects accustomed only to separate individual effort was to be gathered together, synchronised and welded into unified action, where the individual tendency must be subordinated to the requirements of all while dealing with a random plan, the grouping of buildings in harmony of mass and outline conforming to a central governing ideal.

(To be continued.)

THE ILLUMINATING ENGINEERING SOCIETY.

(Concluded from last week.)

MR. F. W. GOODENOUGH, of the Gas Light and Coke Company, continued his remarks as follows:—

Some tests made by the kind permission of the authorities at the Westminster City School, and the L.C.C. school at Barnsbury had demonstrated this fact very conclusively. Where the inverted burner was used the average illumination was 4.5 foot-candles, with a consumption of gas of 3.78 cubic feet per 100 square feet of school, whereas with the upright burner, the average illumination was 4.4 foot-candles—practically the same average illumination—but the consumption of gas, instead of 3.78 cubic feet, was 5.85 cubic feet per 100 square feet of school. Comparable results had also been obtained in other schools. Dr. Harman had spoken of sensibleness of variations in pressure. He did not know whether that was a misprint in the paper; it seemed that Dr. Harman meant that it was one of the points against inverted burners. On this point he would only say that the gas supply to every school, or indeed every building, should be governed from the meter, in order that there should be no variation in pressure. It was a comparatively easy and inexpensive thing to do, and it made both for economy and

efficiency. Dr. Harman had also remarked that inverted burners had not proved satisfactory in the hands of the average school keeper, but in his experience very few incandescent burners of any description proved quite satisfactory in the hands of the average school keeper, and he would again urge the point that he had urged before the Society before, of the advantage of every consumer placing the maintenance of incandescent burners in the hands of the gas company, who employed skilled men entirely for that work, and whose interest lay in giving their consumers the most efficient system of lighting. The comparative result given by Dr. Harman of the use of different kinds of reflectors was exceedingly interesting, and demonstrated very conclusively the value of the 90° reflector that was described and illustrated in his paper, but he was sorry to see that on the score of cheapness a compromise had been adopted instead of the 90° reflector. He thought it was a great pity that any public authority on the score of cheapness should go in for a system of lighting that was not the best, because he was sure that the satisfactory lighting of schools was of vital importance to the rising generation. Then there was the truly British fact that the lights in the classrooms were usually set rather with a view to symmetry than to good lighting. That was so like the British nation. The position of the lights was determined in a very haphazard fashion, and the desks, as Mr. Baker had said, were sometimes rushed in at the last moment, and the lights also. He hoped that this discussion, in which the L.C.C., through their officials, had taken so much interest, would lead to this state of things rapidly passing away. He would like to mention in connection with the tests that he had been making the difference of illumination found in some cases between the writing surfaces and the reading surfaces of the desks in the L.C.C. schools where the desks were adjustable; particularly at the backs of the rooms, it was found that the reading surface was very badly illuminated in comparison with the writing surfaces. This, he believed, was due to the dark dadoes that were common in these schools, and which had a very much more marked effect upon the illumination of the desks, especially when set up for reading purposes, than was the case in any other part of the room. This point certainly needs consideration from those responsible for the lighting of schools.

Another point upon which he would be expected, and would like, to say a few words was the connection between lighting and ventilation in schools. Where gas was used, it could be utilised very materially for assisting ventilation. Dr. Harman, in referring to another system of lighting, mentioned the advantage of the absence of consumption of air and so forth, but he would be very glad if Dr. Harman could get the L.C.C. to carry out some tests of the atmosphere of rooms when lighted by gas and when lighted otherwise, or even not lighted at all. Some tests on this point had recently been published. They were made by the medical superintendent of the Lewisham Infirmary, and he was led to make them as the result of some experiments at the offices of the Society of Medical Officers of Health. The results had been published in "The Medical Magazine," and they showed that the atmosphere of a ward lighted by gas was precisely as hygienic—neither more nor less—as a similar ward without any lighting at all. There was only normal ventilation in the ward lighted by gas, but the fact that the gas stimulated the ventilation resulted in there being no vitiation of the air. He would like Dr. Harman to consider this subject and see whether he could get the L.C.C. to carry out some tests on this very interesting point.

The Gas Light and Coke Company had taken a number of photographs of schools as good illustrations of lighting in their district, and he would ask his assistant, Mr. Clarke, to give the particulars in connection with these tests, as he had superintended them.

Mr. J. G. CLARKE, in describing the slides thrown on the screen, said that the L.C.C. Barnsbury school was typical of the gas lighting in most of the L.C.C. schools. The classrooms were lighted by six Kern burners with Scott globes. The area of the room shown was 750 square feet, with accommodation for eighty scholars. The mean illumination was 2.61 foot-candles, and the diversifiable co-efficient about 1.5. A classroom in the Westminster City School was shown, lighted by four inverted burners, shaded by opal shades, which gave a mean illumination on the desks of 2.63 foot-candles. Another classroom in the same school, lighted by upright burners, shaded, has a mean illumination of 2.7 foot-candles. The consumption of gas per square foot was considerably higher than that in the room lighted by inverted burners, so that although a very excellent illuminating effect could be obtained by upright incandescent gas burners,

it was more costly than the same thing done by inverted burners.

At the East Ham Board School inverted gas burners were used, hung about thirty inches from the ceiling and shaded by opal shades. The room shown had accommodation for sixty scholars, and the mean illumination was 3.1 foot-candles.

A series of photographs was then shown of halls in various schools. At the Barnsbury school, the area of the hall was 2,300 square feet, and the mean illumination on the floor 2.25 foot-candles. The diversity co-efficient was very low, showing a very uniform illumination. The hall of the Westminster City School had an area of 2,755 square feet, and here again, with gas lighting a very uniform illumination was obtained, the average being about 2.2 foot-candles. At the East Ham Board School, the hall has an area of 2,500 square feet, and is lighted by inverted lamps having white enamelled shades, the lamps being arranged centrally down the hall. The average illumination on the floor was 2.9 foot-candles.

Two slides were then shown of school workshops. The first was the workshop at the L.C.C. Barnsbury school, which has an area of 1,000 square feet, and is lighted by upright burners, fitted with the new opal shade described in Dr. Harman's paper. The illumination on the benches is practically uniform, and works out at 4.4 foot-candles. The other was the workshop at the Westminster City School, which was lighted by inverted burners. Here again a very uniform illumination is obtained, the average being 4.5 foot-candles. This room has fifteen benches, and accommodates thirty students.

The lighting of the art room at the Westminster City school is rather of a mixed character, owing to the necessity for having a very wide range of variation. Here the range is from 6 to 15 foot-candles in different parts of the room. In the middle of the room there are inverted lamps fitted with parabolic shades, the illumination in the vertical plane being between 10 and 11 foot-candles. The chemical laboratory in the Westminster City school is lighted by inverted burners similar to those previously described, and the illumination on the benches is rather over 3 foot-candles.

The CHAIRMAN pointed out that the series of experiments by Mr. Dow and Mr. Gaster and Mr. Clarke were all carried out with the same instrument, namely, Mr. Dow's lumeter.

Mr. RITCHIE also mentioned that his experiment had been carried out with the same instrument.

Dr. PISANI said he had been in India for many years, and had been interested in the causation of cataract. Many people attributed cataract to the ultra-violet rays, but he had not found any evidence whatsoever of this. Indeed, he thought there was very important evidence that ultra-violet rays were not the cause of ordinary cataract, for the reason that in mountainous regions like Switzerland and Norway, where the ultra-violet rays were very prevalent, cataract is comparatively rare.

Dr. E. H. NASH (Medical Officer of Health, Wimbledon) said his sphere of influence was much more connected with daylight lighting than with artificial lighting, and Dr. Kerr's section of the discussion seemed to have been rather left out. The lighting of blackboards in infants' schools was a very serious matter, and he would be very glad if the Society could do something to set up a standard of daylight illumination in such schools. This had been particularly brought to his notice by watching the teaching on the Dale system by means of coloured letters on blackboards, for which chalks were used. He demonstrated that certain of these colours at a certain distance were quite invisible. He did not think the Society quite realised the far-reaching effect which the discussion was going to have. It would affect particularly the whole question of the design and shape of classrooms, and also the size of windows. It had brought out the fact that the shape of classrooms should be altered. The Board of Education had laid it down that the square classroom should be replaced by a longer classroom, with rows of desks in order to avoid the present position of the natural lighting in full daylight being as low as half a candle-foot in certain portions of the room. If the Illuminating Engineering Society would tackle this matter it would be doing a very great service. The Society should also make experiments as to the position of blackboards during day time in relation to the window, and some advantage might also be derived from being able to tilt the boards. The present practice was largely to place the boards in a corner, but he advocated that they should be placed in the middle of the rooms near the window. This raised the point as to

the advantage of carrying the windows right along the wall of the classrooms, in order to avoid the large amount of brickwork which was at present a common thing in schools. In the majority of London schools, and indeed throughout the kingdom, there were large heavy mullions which took up a large amount of the light. He knew of one case in the provinces where the mullion was being dispensed with altogether, and it certainly was an important point in dealing with the illumination of such rooms. At the same time it should be pointed out that increasing the window space involved the problem of interference with the heating. It might be necessary to increase the heating by about 50 per cent., so that they would all realise the enormous importance of the problems now under discussion. As a school medical officer, he welcomed the discussion most heartily, because he felt it would enormously strengthen their hands. School medical officers were being scoffed at for knowing nothing about this matter, but the medical officer, at any rate, was keenly alive to the fact that the solution of the problem of maintaining the health of the children was in their environment, and that one of the most important factors in this was illumination, both daylight and artificial.

Mr. A. H. RYAN-TENISON, F.R.I.B.A., as an architect with experience in school design, said there were two points which troubled the architect; one was the difficulty of securing good natural lighting where the site was surrounded by buildings, and the other was the difficulty of getting good artificial lighting at the back of the rooms which were more than a certain distance from the lighting unit. The Board of Education rules required about one foot of glass area to six feet of floor area, but this, as the late architect of the L.C.C. had pointed out, was very much ruled by the effect of how much the school went back. The Board of Education required no wall space to be more than 24 feet 6 inches away from the windows, but—and in this he was confirmed by Mr. Bailey—it was a fact that they never got proper natural lighting in any room where there was any window within 22 feet of the wall. Thus with 24 feet 6 inches there were 2 feet 6 inches at the back of the room which would not be properly lighted. On the question of gas v. electric lighting it would be very interesting to architects to know how far the advocates of both methods of lighting would space the lamps apart. He had generally adopted 7 feet 6 inches when using 16 c.p. lamps, i.e. no child ought to be more than 7 feet 6 inches away from a light which fell on a desk at an angle of 45°.

Mr. JOHN DARCH said, in Dr. Harman's excellent paper on "The Artificial Lighting of School Rooms," he had made what he had termed a "modest demand" for a minimum desk illumination of 10 metre-candles, a little under a foot-candle. The demand was much too modest; for, as working and standard minimum, it might with advantage have been 30, or at least 20, metre candles. He was aware that it had been shown that visual acuity with ordinary types was possible at an illumination of 10 metre-candles, but bare physical possibility was quite a different thing to permissible minimum, and danger lay in the fact that published opinion of Dr. Harman might influence the makers of regulations and bye-laws, and, unfortunately, the taxpayer and the administrator usually felt that they had done their duty if they kept within a minimum.

But visual acuity depended not only upon the amount of illumination falling upon a surface, but also on the colour of that surface and the size of the detail thereon. Let us consider some of the causes of eye strain in schools. There were the map studies, in which minute detail, often on a coloured ground, had to be searched out; there was signposting, where the eye had to grasp very small lines and details in a short time; there was geometry, with its faint pencil lines and its needle pricks to be discerned; even the studies in arithmetic were made a little trying in a poor light. The reason of the common dark coloured scribbling paper—good enough otherwise—which the L.C.C. supplied; while the eye strain in needlework had been so obvious that in many schools this work had often to be postponed. He claimed, therefore, that for official purposes, 30 metre-candles or, say, 3 foot-candles, be considered a standard minimum for ordinary desk illumination, while the classrooms for drawing and needlework should have a minimum of 80 metre-candles.

He was glad to observe Dr. Harman's references to daylighting. There was no reason why the village school should not enjoy as scientific and as artistic an illumination from oil lamps as from the more modern forms of light; they needed only to be suitably designed and arranged, the candle power sufficient, the bare lights screened, the general lighting well diffused and separate local lighting provided where necessary.

Dr. Harman recommended a certain opal shade set 6 feet 6 inches from the floor. He had measured a typical classroom in one of our newest South London L.C.C. schools, and prepared a vertical section in which he had shown the lamps as recommended by Dr. Harman, and in which it would be seen that the opal shade, with a surface brightness of 1 c.p. per square inch or more, was right before the eyes of the children, and was bound to baffle their efforts to discern the blackboard. The remedy was simple. Either keep the lights up to within two or three feet of the ceiling and add screens if necessary, or, if the lights must be 6 feet 6 inches from the floor, then protect both the children's and teachers' eyes by means of opaque shades with the top left open for illuminating the ceiling and upper walls.

It was with much pleasure that he would support Dr. Harman's view of the need for a special and different treatment of the teachers' portion of the room. It was the place of exhibit and display, and should be suitably provided with covered lights for that purpose.

He had to take exception to the statement that high voltages and intensely powerful lights meant uneven distribution and black shadows. On the contrary, the greater the intensity of the light the easier it was to modify and diffuse, consequently the more even would be the distribution and the softer the shadows.

Nor should "the glowing filament" need reducing in intensity; for, in the first place, it should not be visible to the eye, and in the second place it should not be prevented by glass or anything else from shedding its fullest illumination upon desk and ceiling, in order to obtain the most pleasing effect and the greatest visual acuity.

Mr. JUSTUS ECK saw no difficulty from the architectural point of view of designing modern buildings so that sufficient daylight and also artificial illumination could be secured. The question of illumination of the remote side of rooms he thought could be very well met by adopting some of the modern glassware that had been so excellently adapted to gas and electrical illuminations. For instance, there was the Luxfer form of glass which threw beams of light horizontally across a room from a window. The question of the colour of the walls of rooms was also an important factor, and he hoped it would be dealt with to a greater extent on a future occasion. His experience was that in order to get the best effects from artificial illumination with good diffusion, it was necessary to carry a deep frieze, perfectly white, round the room, and below to have a light colour wall, say a light green tint. As a matter of fact, this method of interior decoration lent itself to improving both artificial and daylight illumination. He was a strong believer in indirect methods of illumination, but deprecated having uniform illumination all over the room, which might be obtained with light walls, and, say, a white linoleum on the floor or white carpet. Such surroundings would soon become very uncomfortable, as there would be no place for the eye to get a little rest; it was the contrast between illumination in one place and another that gave what was generally called feeble illumination, and it was in this connection that he hoped his suggestions would be of some value to the Society. The various speakers in the discussion had referred to illumination in various values, and he hoped that in the journal one standard form would be used, so that direct comparisons could be made. Dr. Harman had adopted an exceedingly low unit of illumination. One foot-candle was quite out of date for modern requirements. In the little country of Holland they had adopted a standard illumination for factories, under their Factory Acts, of $2\frac{1}{2}$ foot-candles. When he attended the International Congress of Medicine in Brussels in September 1910, Dr. Broca contributed a paper in which he put forward as the absolute minimum illumination for industrial purposes, 3 to 4 candle feet, and he was perfectly sure that a test of the quality of work and the rapidity in which work was done would show that this figure was by no means excessive. Mr. Gaster and Mr. Dow had assumed from two to three candle feet as a minimum for school lighting, and five to ten candle feet where special work was being carried out. The L.C.C. had gone even to $8\frac{1}{2}$ and 10, so that a minimum of not less than 4 candle feet seemed to fall within actual practice. To adopt one candle foot would lead them into the difficult question of glare. If one candle foot was to be the minimum illumination, then the source of light would have a very low intrinsic brilliancy, and he did not know whether such a source of light was to be obtained which would give light economically. It was necessary to have high intrinsic brilliancies with proper shades and proper distribution of the light; in this way it was possible to get rid of the glare question.

Mr. V. A. H. MACKINNEY pointed out that to space 16 c.p. lamps 7 feet 6 inches apart, as had been suggested, meant an average of $\frac{1}{3}$ of a watt per square foot for an average consumption, which was not enough for good illumination. With this value it would be impossible to get beyond 1 to $1\frac{1}{2}$ candle feet with the present light units, and in this connection he mentioned that there was the need for a very much greater increase in the energy consumption for school lighting. There was little doubt that indirect lighting was the ideal method if it could be adopted, and it might be interesting to the meeting to know that a scheme was on foot for getting indirect lighting with metal filament lamps at a reasonable energy consumption. Mr. Ritchie had shown some admirable photographs of indirect lighting with arc lamps, but there was a slight flickering with these, which was objectionable for close drawing work, and the like. He repeated the argument put forward at the last meeting of the Society that when the intrinsic brilliancy of the upper hemisphere increased, it was necessary to have a greater amount of illumination at the horizontal or working plane. He also exhibited a new form of tube for lighting on the linolite principle, designed to give an even illumination over an extended area. Used as a means of indirect lighting, he anticipated much more efficient results than were at present obtainable. Indeed, he thought there was little doubt that 80 per cent. of the useful light could be reflected on to the working plane by the aid of such a light unit. With regard to a standard illumination for schoolrooms, he thought it would be more useful, not necessarily, to state a standard so much as a minimum value according to the nature of the work that the rooms were to be put to. The point made by Mr. Baker of the difficulty of having the desks in position early enough to determine the positions of the lights, simply pointed to the need of greater co-operation between the architects, lighting engineers, the medical profession, and the authorities concerned with schools. He thought the new form of lighting which he had referred to would be ideal for blackboard purposes.

Dr. KERR, in a brief reply, said there was no doubt that the day of rule of thumb in relation to schools had passed away as far as illumination was concerned, but he thought the Society might go a little further because schools were only one thing, libraries were another, and so on, and we were undoubtedly going to develop in relation to hygiene in general some standard. The difficulty had been to measure lighting, and in connection with the recent legislation about bakehouses there was great difficulty in determining the lighting. He was of the opinion that legislation in respect of lighting would be largely extended as soon as the means for standardising the light existed. Could the Society form a committee to consider the question of school lighting, and draw up a few simple rules in relation to classrooms, large rooms, blackboards, &c., simply as a hint to educational authorities throughout the country?

Dr. HARMAN also briefly replied. He regretted that so little attention had been paid to natural lighting, because, after all, the greater part of the work of the children was done in daylight, and artificial lighting was the last thing in the world they wanted. In fact, he would like to see schools closed after daylight. Indirect illumination was splendid, but in practice he had not found it satisfactory. It was probably very fine for looking at pictures, but in rooms and workshops where close work was being carried out his experience was that it was not so satisfactory. He had mentioned in his paper that for museums and showrooms it was all right, but at the Cambridge Anatomical Schools, as mentioned in his paper, it was not a success. There must be a complete absence of flicker in classrooms of forty children, and especially where special subjects were being taught. With regard to Mr. Goodenough's remarks concerning gas, he thought that when gas claimed that the burning of coal gas in a room improved the ventilation, it was a sign that gas was on its last legs. He hoped it was. In his opinion, the only way in which gas could improve the ventilation of a room would be for everyone of the gas burners to have a shaft which would carry off the products of combustion, but nothing would convince him that under the ordinary conditions of gas lighting the state of the air of a room was improved.

Mr. S. COWPER-COLES exhibited some specimens of translucent glass, which he had found very effective for reducing the glare of bright lights, such as metallic filaments. The translucent glass is ordinary glass coated with a very thin film of gold, which acts as a good reflector, and at the same time transmits a certain proportion of the light as green light. If a translucent glass shade is placed in front of the source of light or below it the thin gold film on the glass

acts as a reflector, and throws a gold coloured light on the walls and ceiling, and the transmitted light is of a soft green colour. The combination gives a very restful and pleasing light to work by.

The CHAIRMAN proposed a hearty vote of thanks to Dr. Kerr and Dr. Harman, and also Mr. Gaster and Mr. Dow, which was carried unanimously.

PROTECTION OF CONSTRUCTIONAL IRON AND STEEL.

A MEETING of the Paint and Varnish Society was held on May 18 at the Agricultural Hall, Islington, in connection with the Chemical Engineering and Industries Exhibition. Mr. Leonard Archbutt occupied the chair, and Mr. J. Cruickshank Smith, B.Sc.; F.C.S., read a paper on "The Prevention of Corrosion in Iron and Steel," as printed in our issue of May 26.

The CHAIRMAN said the lecturer had given them a most interesting and suggestive paper, and had set an excellent example in not referring to any particular paints. He had treated his subject in a broad and scientific manner, laying down the conditions which a good paint ought to fulfil; and he had given his ideas in reference to the proper way in which two pigments ought to be compared one with another when an engineer had to decide which he should use. He invited full discussion on the paper.

Mr. MATT. GARBUTT was of opinion that Mr. Cruickshank Smith had provided the heads for a whole series of lectures. He would like to know how they were to get the protective coating on to the iron at all under some practical conditions. It seemed to the speaker that in the case, for instance, of re-painting a railway bridge the paint had generally little chance of getting into contact with the metal at all. When the workman set to work to "clean" the metal, he scraped off a certain amount of dirt. If there was a lot of old paint on the surface, he banged it with a hammer and it came off in flakes. But, after all, there was a film of something—probably dirt and moisture—between the metal and the paint. A great boon would be conferred upon engineers if they could arrive at some means of really cleaning metal before they put their paint on it. That always seemed to him to be a great engineering difficulty. It was conspicuous in the case of tunnels, carried by girder-work, through which steam locomotives passed. The roofs of those tunnels might be said to be never dry; the steam and products of combustion being almost continuously squirted on to the girder-work. There was perhaps only an interval of three hours in the course of a week available for painting. He would like a little more information upon the point that the author lightly touched upon as to the protection of steel in ferro-concrete. He gathered that it was the author's opinion that simply putting the steel into the concrete and packing it as well as possible by hand was not a reliable permanent protection. If that view of the case were correct, there was a great deal of trouble ahead in ferro-concrete buildings.

Mr. J. G. McINTOSH said the lecturer had referred to the fact of chromium and tungsten in small proportion in iron as reducing the tendency to corrode. That principle was well known to the speaker many years ago in regard to the lead-coating of drums for holding spirits of turpentine. If they coated an iron drum with lead, that lead would turn the spirits of turpentine yellowish-brown; but if even a quarter per cent. of tin were put into the lead, the latter would withstand the action of spirits of turpentine. That was the same principle which the lecturer had enunciated in regard to iron with a certain amount of chromium and tungsten. While fully endorsing the author's remarks in regard to magnetic oxide of iron paint not being so efficient as that specially produced on the metal by superheated steam, he was somewhat in doubt with regard to the stencil marks put on iron, and which were found to withstand the action of the weather better than the actual coat of paint itself—whether that was not partly due to the paint binding the natural mill scale to the iron, and both paint and mill scale thus conjointly protecting the iron. He could not endorse the remarks as to zinc plating of iron. In costly construction work, if iron was coated with lead and then put through rolls, the lead would be driven into the flaws by the pressure of the rolls. Any flaws in the iron acted as nuclei of corrosion, and were somewhat analogous to knots in wood. Although the lecturer had exhibited diagrams of zinc oxide and zinc sulphide, there was no diagram of white

lead. In regard to red lead, the physical action of stirring it with a stick, by breaking up its crystalline structure, would reduce it a hundred times more than the reducing action of the white.

Mr. A. E. MUNBY desired to express his appreciation of the lecturer's wish that scientific facts should come a little more into these questions. As regards electrolytic action, they might learn a great deal by experimenting. Science had contributed a great deal in the last decade to the question of rust on iron. This applied to America also. Moisture and air seemed the essentials of rusting, but as regarded the effect of the coating from an electrolytic point of view, he thought the best thing one could have to coat iron with would be iron scale, were it possible to make this up as a paint in suitable form. He would like to ask if the lecturer had any information as to the comparative electrolytic decay with iron oxide and lead oxide. He assumed red lead was much better as a medium in oil. He believed that most of the Angus Smith solution supplied was merely coal tar, and not the coal tar with the acid ingredients removed. He quite agreed that if they really obtained Angus Smith's solution they could not have a better covering. It was a substance analogous to rubber, which was quite impervious to any moisture. With such a covering the presence of solid particles would be quite unnecessary for protection of the material.

A VISITOR asked whether the lecturer had any experience of the prevention of oxidation of iron and steel by means of surface welding by acetylene?

Mr. F. O. BARRALET wished to know on what the author based his opinion as to the small extent to which the vehicle entered into the preservation of iron and steel. It seemed to him that the most efficient preservative was a tarry compound known as Dr. Angus Smith's composition, which, when put on properly, preserved the life of the iron almost indefinitely. In that material there was no actual pigment at all. The preservation depended entirely upon the absence of any chemical liquid or anything that was likely to cause corrosion by the film of tar or pitch that coated the metal. For this reason he thought that the substance which was in the nature of a vehicle had a very important function in the prevention of corrosion. Also that in the ordinary paint the actual vehicle must come into play to some extent. Otherwise, how was it that paints made with good vehicles were so much superior to paints in which the vehicles were not good, paints in which genuine oils had not been used, and in which there were no genuine diluents?

Mr. J. H. B. JENKINS said he had previously been of the opinion that the protection afforded by a coat of ordinary paint was due primarily to the oil-film; he understood the lecturer, however, to say that the protective value of a paint resided essentially not in the oil vehicle, but in the pigment. He had an open mind upon the matter, and would be glad if Mr. Cruickshank Smith could throw some further light upon that point. As illustrating the importance of the quality of oil-vehicle in ordinary painting, he thought the following experience might be of interest to the meeting. A little while ago he had to investigate a case in which a varnished surface had dried to a very imperfect coat. It had gathered itself up into a lot of roughly parallel lines or ridges, say one-eighth of an inch or so apart, the intervening spaces having little or no varnish. The paint surface upon which the varnish was applied had seemed to dry all right, so that suspicion had first attached to the varnish. Soon, however, attention was concentrated on the paint. This had been received as a paste ground in oil, and the latter, when separated and examined, was found to be adulterated with about 20 per cent. of a thin mineral oil (0.89 specific gravity). Before being applied, this paint paste was let down with pure oil, &c., so that in the thin paint, as applied, the percentage of mineral oil was reduced to about 3 per cent. When such a paint is applied there is a tendency for the linseed oil, on drying, to exude the mineral oil. This exudation becomes obvious with larger percentages, but with the 3 per cent. of mineral oil the separation which takes place along the brush marks is not visible. The coat of varnish, which is next applied, however, does not obtain a uniform hold on the paint surface beneath. Along the brush marks there are lines of weakness due to the exuded mineral oil, and these become evident as soon as the tension of the drying varnish coat becomes considerable, for the varnish, not getting a proper hold, is dragged away from these lines, and this gives to the varnished surface the final appearance complained of.

Mr. CHAPMAN asked the lecturer what protection he would advise for girders which had to be shipped abroad. He

noted a case where some had been damaged by sea water. Having removed the oxide of iron by an electric brush, would he lecturer consider it safe to ship these on a long voyage, or would he suggest a protective covering? If so, what? Painting, of course, would be out of the question on account of expense. He wished also to associate himself with those other visitors who had congratulated the lecturer and the Society on the able paper and interesting discussion they were having.

Mr. GASTON DEPIERRES was sure that those who had made a life-study of the matter would agree that the method of applying successive coats of properly prepared paint was by far the most efficient and economical method known at present of protecting iron and steel. The designing and compounding of suitable coatings was a problem which to-day was ever before the progressive and scientific paint-maker. Only the competent man who had made a careful study of the protection of constructional steel was capable with any degree of certainty of manufacturing a coating which would fulfil what was expected of it. He thought engineers and architects should pay no attention to many of the extravagant claims which were made to-day in some pamphlets and circulars. They should entrust to the specialist the responsibility of advising them. He agreed with Mr. Cruickshank Smith on the subject of the fine grinding of paint. He had for many years expounded the theory of fine grinding as one most important to the physical condition of the paint. Further, unless iron and constructional steel were properly cleaned, no paint would ever furnish a good protection to these materials.

Mr. T. A. DAVIDSON considered that it was open to question whether the pigment was the only protective agent in a paint. Until absolute proof had been adduced, it was well to hold an open mind. While it was possible that a certain amount of dissociation might occur with wet pigments placed in contact with iron, thereby enabling the pigments to be classified as "accelerators" or "retarders" of corrosion, it was extremely improbable that any dissociation would occur when the pigments were mixed with oil, so long as the resulting paint film was impervious to water. From his experience it was to neither the pigment alone nor to the oil alone that one could ascribe the protection, but rather to that combination of physical properties which could only be attained by a proper adjustment of the various ingredients. Perry suggested the idea that a perfect paint contained particles of different sizes, such that the smaller ones packed themselves into the interstices of the larger, and the whole were cemented together by a film of oil. The more perfect the adjustment of the ingredients the less pervious would the paint film be to water. If that were so, then he thought one must ascribe the protective action of paint to the oil medium as much as to the pigment.

Mr. WALTER C. HANCOCK, on the question of the protection of iron and steel in the case of ferro-concrete work, understood the author to say that it would be an advantage if some protective coating could be applied to the metal, partaking more or less of the nature of Portland cement. He did not know whether Mr. Smith was aware of a paper published in one of the American journals dealing with this subject (*Cement Age*, 1909, p. 424-429). From the experiments which were recorded there, it appeared that on the whole the metal rods, &c., used in ferro-concrete construction were well protected by the surrounding mass of cement or concrete, with one or two exceptions. The chief one was in the case where there was anything of an angle, into the corners of which it was impossible practically to force either the cement or the concrete, as the case might be. In such cases it had been found that the metal tended to corrode. In the paper referred to the suggestion was made of actually giving the metal rods a thin wash of a Portland cement paint, which could be applied and left to dry in the air, and did not peel off on exposure to the weather, while the rest of the concrete was being made up, and it was also pointed out from a number of experiments which were made that it did not at all interfere with the adhesion of the metal rods to the concrete or cement.

Mr. B. PHILIP-SMITH thought a coating of cement wash was all very well in a purely ferro-concrete building. But, unfortunately, architects and others had carried that a step too far in that they now allowed, under the London Building Act, the concrete to have a coating of cement wash on purely steel frame buildings. As to the relation between pigment and vehicle, he had always considered that the vehicle must in itself be a good protector against the corrosion of iron, and that as a fact the vehicle protected, and the pigment in turn protected the vehicle. Regarding the electrolytic

action of certain pigments on iron, he thought they had taken the electrolytic action in one direction entirely, but had omitted to take the reverse effect as between the pigment and the iron. If pigments which are electro-negative to iron cause, as is alleged, corrosion of the iron, then surely pigments which are electropositive to iron would, if the electrolytic theory holds good, be themselves corroded and destroyed.

Mr. CHARLES A. LINE suggested the use for paint thinners of sunflower seed oil, with a suitable manganese drier, there now being an ample supply of the Russian article available. He had always understood that Dr. Angus Smith's solution was applied at the works where the constructional steel was made. He might be in error, but he had an idea that iron or steel had to be dipped into it when hot, so that treatment at the works would enter into the question very much indeed. As an alternative, if a thin coat of suitable graphite paint were applied at the works before the steel was brought away (except, of course, in the presence of any serious amount of mill scale), it certainly was very effective indeed in the prevention of subsequent corrosion. He then mentioned the protection of girders. To prevent a bridge over a railway being injured by the steam and sulphur dioxide emanating from the funnels of the railway locomotive engines, a suggestion was made by himself to put a ceiling under it, composed of asbestos and Portland cement in the form of sheet, something like three-sixteenths or a quarter inch thick. This treatment was considered, after some years' trial, a success. As a consequence, only that day a consultation had been finished and an order placed for many thousands of yards of this material a quarter-inch thick, to be placed underneath steel girders and to thereby assist in their protection. His experience of a mixture of graphite, finely subdivided, and zinc oxide of suitable physical properties, thinned with drying linseed oil, containing manganese linoleate drier, was that this grey paint afforded efficient and economical permanent protection to iron and steel in an ammonia works, adjoining a gas works in a very exposed position. It can be mixed to any shade of grey, and presented a cleanly and smart appearance, not being subject to discolouration, as white lead paint always is.

The CHAIRMAN, in closing the discussion, said he thought the most important part of Mr. Cruickshank Smith's paper was that in which he emphasised the necessity of painting under proper conditions. Unless the material to be painted was properly prepared and properly dried, unless the weather was suitable and the tools and the workmen were good, he did not think even the best paint would prove efficient. It would be well if engineers would take more care to see that those necessary conditions were complied with. There were many good pigments on the market which would give excellent results, and which it would be difficult to find a better substitute for, if attention were paid to the points which the lecturer had laid stress upon. There was no such thing as Dr. Angus Smith's solution. He would like to destroy that illusion. If they read his specification they would find that what he patented was a process which was to take coal tar and boil it until they had expelled the water, the ammoniacal liquor, and the lighter oils, and apply it to cast-iron fresh from the mould. The process was invented for the preservation of water pipes. Those pipes were to be taken immediately they had been cast, before they had an opportunity of rusting or acquiring any moisture; they were to be heated to a temperature of 300 deg. F., and lowered into the prepared tar at that temperature, and left there for a time, then lifted out and allowed to drain. The use of tar varnish was not Dr. Angus Smith's process at all.

Mr. J. CRUICKSHANK SMITH, replying to the discussion, said that, as often happened in discussions like that in which they had been engaged, one speaker answered the questions put by another. This materially lightened his labours, otherwise at that late hour he would have had some difficulty in dealing fully with every point and question raised by those who had contributed to a very interesting discussion. He would first of all thank the Chairman for answering so clearly and correctly the questions that had been put regarding Angus Smith's solution. That material at its best, and even when properly applied, which it rarely was, was quite unsuitable for modern structural iron and steel, and most of the coal-tar products offered as Angus Smith's solution were loaded with tar acids, and tended to promote corrosion. They could not be painted over, and their use implied that the work must be finished in a black hue—which everyone did not like. The question of painting over old paint work, especially if the latter had perished and was scaling and flaking, was a difficult one, because it was

not easy to secure a proper foothold for the paint. The element of cost also entered into it. Unless a considerable sum of money were spent in cleaning the surface it was impossible to provide a surface capable of being painted on at all. Mere "washing and cleaning down," as a painter would understand the expression, would be quite insufficient. For old, perished paint work, loaded with carbonaceous matter from smoke, a blow-lamp treatment followed by sand-blasting and thorough cleaning with wire brushes might be necessary. Often architects and engineers were averse to spending sufficient money to ensure a clean and well-prepared surface. A surface, however, which presented the dreadful appearance described by one speaker, had clearly been left too long before being repainted. The real cure was to use good paint and to paint oftener. With regard to the treatment of steel in ferro-concrete, his view was that although it was generally admitted that Portland cement was an effective inhibitor of corrosion, it only acted as such when in close contact with the metal. Hence, architects and engineers staked everything on this close contact being maintained. He thought, therefore, that by coating the steel with a suitable paint coating they were obtaining additional security that the cement would adhere closely to the metal. A speaker had pointed out that in ferro-concrete the angles and bends corroded more readily than the flat surfaces. Several speakers had referred to the relative value of pigment and vehicle as the protective agents in paint. He disclaimed giving either undue preference, because both were essential in a properly-made paint. He maintained, however, that if they regarded the true function of a protective paint as keeping out moisture, then it was impossible to overlook the importance of the pigment, because it had been definitely proved that the presence of pigments increased the impermeability of the coating, and, further, that the more pigment there was, or, in other words, the less free oil space, the greater was the moisture-resisting power of the paints. He had laid stress on this because many people attached undue importance to the vehicle, and looked on the pigments merely as something with which to alter the colour. Someone had asked whether metals or metallic oxides were of most service as protective pigments. Aluminium, zinc, copper, and iron were all used for special purposes in certain protective paints, but their application was so limited that they could hardly be compared with the ordinary pigmentary oxides. He did not think it was possible to transport iron girders across the sea without first painting them, and he did not think anyone ought to try to do so. The stencil marks, whether of oxide of iron or any other paint, seen on girders no doubt owed their permanence, as another speaker had suggested, to their having been applied to the surface of the metal while the latter was still hot, and, consequently, clean. Asbestine was the trade name for silicate of alumina capable of being used as a pigment. He had not had practical experience of surface welding by acetylene as a prevention of corrosion. With regard to electrolytic action between the pigment and the metal, once moisture was admitted a whole set of complex electrolytic actions might ensue, which might be either checked or encouraged by the pigment. The great secret, therefore, was to keep moisture out. He thought that so far results showed that PbO did not promote electrolytic action so much as Fe₂O₃. He was not aware that sunflower oil, which undoubtedly possessed drying properties, was of sufficient commercial importance to render it a serious competitor to linseed oil at present. He entirely endorsed certain remarks that had been made regarding linseed oil. No linseed oil was fit for use in protective paints till it had been suitably treated and prepared, and when painters and paint users came to recognise this fact it would be all the better for everyone concerned.



[The Editor will not be responsible for the opinions expressed by Correspondents.]

Temperamental Architecture.

SIR,—The articles that you have just reproduced under the title of "Temperamental Architecture" cannot fail to command the attention of your readers, but there will necessarily be a divergence of opinions. This, however, will be quite in accord with Mr. LaFarge's views, as divergence "avoids to

some extent the banal aspect of mechanical regularity," such as parallel opinions might connote.

I write with all conceivable respect for those who differ from me or from whom I differ; but after thus saluting my adversaries, I will proceed to tilt at them.

There would seem to be some confusion between the modern conception of "temperamental architecture" (a really happy phrase) and the ancient conception of architectural refinements, such as were practised by the Greeks. We have no authority for supposing that the latter had any other object in view than the correction of optical illusions; the entablature and the scamilli impares were given respectively to the shaft of columns and to the stylobates and steps in order to obviate the apparent in-drawing of long and continuous straight lines; axial inclination was given in order to obviate the apparent outward spreading of long vertical lines. Other refinements were similarly practised, but in no case, it would seem, with any other object than to provide the "aspect of mechanical regularity."

The variations in regard to Greek ornament do not at all suggest such refinements as above referred to, these depending upon scientifically-practised deception for the purpose of correcting optical illusions, whereas in the case of ornament it was a display of frank artistic feeling with the object of avoiding symmetry, where this quality would be banal.

There seems no reason to doubt that mediæval designer may also have introduced refinements for correcting illusions and here I must draw a bold line—on the one side is approval of the wish to come to the assistance of the defects of the human eye, even at the expense of taking advantage of those defects.

On the other side, I stand as champion for regularity where irregularity has no reason. If "the idea is simply to avoid the harshness and monotony of exact rectangles," then a variation which is only detectable by measurement leaving otherwise the appearance of an exact rectangle (the result, of course, of optical illusion)—such a variation, I maintain, does not answer its avowed purpose.

Again, if the human eye is apt to give an apparent upward slope to flat surfaces below, as they trail off into the distance surely an actual upward slope would exaggerate this effect; to obviate it, a downward slope would be necessary.

I think, sir, the mistake lies in the attempt to cure optical illusions, irrespective of their nature. Some there are, such as the old Greeks recognised as needing vanquishment. But allow me to give two instances, to show the absurdities that might result from indiscriminate cure or indiscriminate neglect of cure.

The rails for a train seem to converge regularly from the point nearest to the eye; it is inconceivable that they should therefore be so laid as to satisfy the optic, for their practical utility would be thus destroyed; they have to be actually parallel, instead of seemingly so. On the other hand, consider the Nelson monument in Trafalgar Square if the statue of Lord Nelson were merely life-size, it would look insignificant from the footway, whereas its size is calculated so as to provide a natural appearance. Of course, it is absurdly gigantic if regarded from the abacus of the capital; it may be (and I think it is) wrong to place such memorial statues where they need exaggeration in size, but I will not debate that in this place. My wish is merely to demonstrate the necessity of discrimination in dealing with illusions.

In conclusion, I consider the use of temperamental architecture, as instanced by Professor Goodyear, opposed to the canons of Art. There is no more objection (rather less) to a rectangle, a square or a circle, than to temperamentalised substitutions; but if the latter are provided, they are useless if they are not made visually apparent.—Faithfully yours,

PERCY L. MARKS.

Albert Buildings, 49 Queen Victoria Street, E.C.

MILTON Rural Council have received a letter from the County Council asking them to give their earnest attention to the report of the County Medical Officer, who has recommended main drainage and sewage disposal works for Rainham. The scheme is estimated to cost about 12,000*l.*, whereas the population of Rainham is about 4,000.

THE Carnarvon Board of Guardians have approved the amended plan, prepared by Mr. Rowland Lloyd Jones, county architect, Carnarvon, of a new hospital in connection with the workhouse. The plan has been drawn on the pavilion principle, providing accommodation for 42 patients and four nurses.

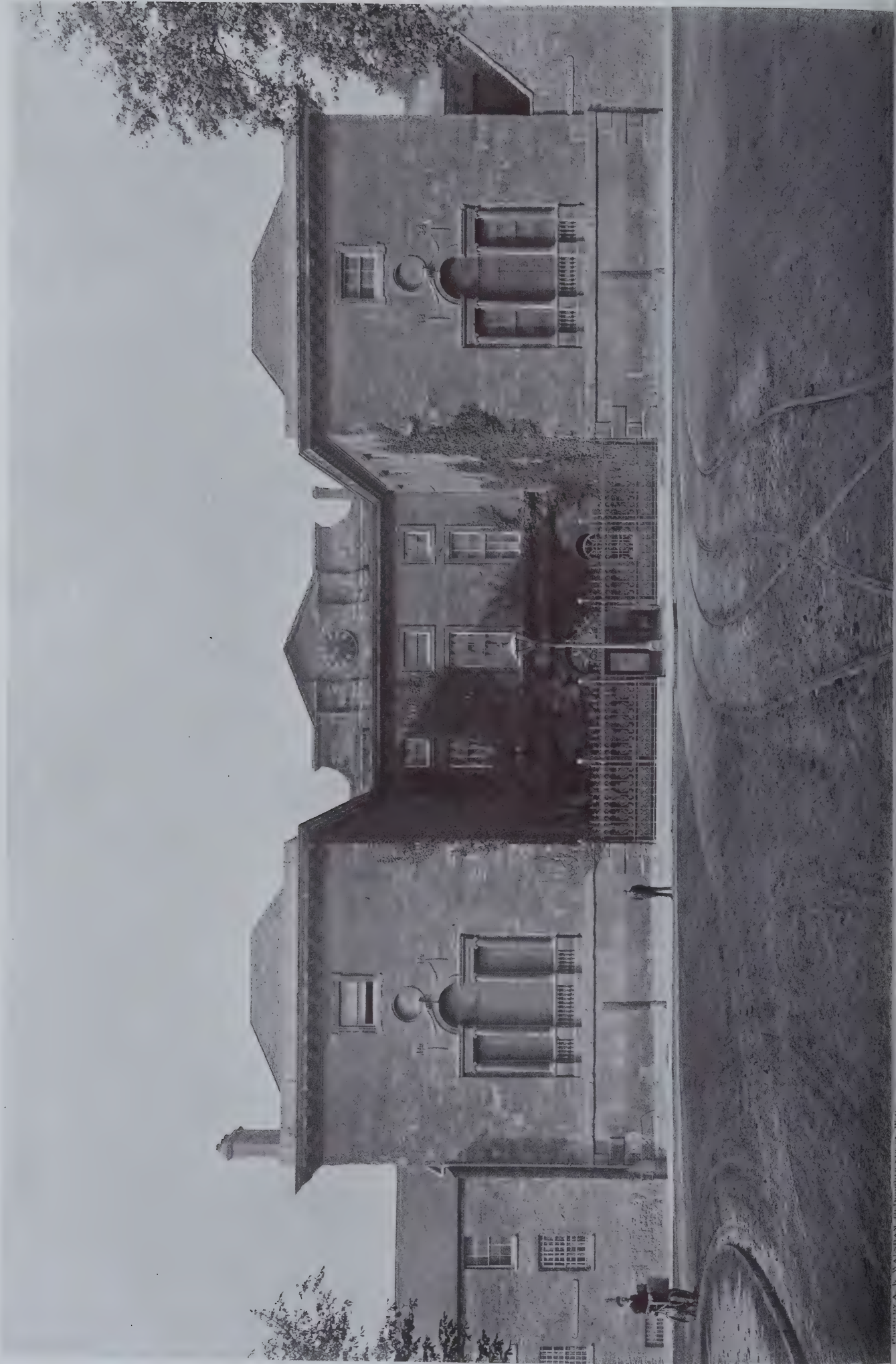




Photo by A. E. WALSHAM. 60 Doughty Street, W.C.

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MEMORIAL TABLET,
KNARESBROUGH CHURCH.



Here lyes the body of
Dorothy Slingesby late wife of
Thomas Slingesby of Scriven Bar
daughter & coheir of Geo Cradock
of Careswell Castle in Staffordshire
Esquire
Shee dyed y^e 24th of Jan 1673
by whom hee had 3 Sons Henry Tho
and George
and 3 daughters
Dorothy Eliz & Barbara.

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PRIZE DRAWING BY MR. E. H. GIBSON.

"THE ARCHITECT" STUDENTS' SKETCHING & MEASURING CLUB.

RENAISSANCE FRAME HENRY III TOMB WESTMINSTER



PORT OF IRON GATE PANEL
16th CENTURY

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OD, SURREY.
B.A., Architect.

The Architect.

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FORTHCOMING EVENTS.

Saturday, June 10.
Edinburgh Architectural Association : Proposed Joint Visit to Glasgow with the Glasgow Institute of Architects.
Northern Architectural Association : Meeting at Sunderland to visit St. Gabriel's Church (Mr. C. A. C. Greene, architect), and the Water Company's New Offices in John Street (Messrs. W. & T. R. Milburn, architects).
Architectural Association : First Summer Visit to Nashdom, near Taplow (Mr. E. L. Lutyens, architect).
Monday, June 12.
Royal Institute of British Architects : Business Meeting, when the Annual Elections will be announced, to be followed by Mr. Ernest Richmond on "Building in Egypt."
Royal Institute of British Architects : Opening day of Preliminary and Intermediate Examinations.
Tuesday, June 13.
Manchester Society of Architects : Visit to Wilmslow to see (1) Parish Church and (2) Hawthorn Hall.
Wednesday, June 14.
Royal Archaeological Institute : Mr. G. C. Druce on "Notes on the Heraldic Jall or Yale."

EXHIBITIONS AND FIRES.

THE Brussels Exhibition fire of last year has afforded the British Fire Prevention Committee an opportunity of publishing an account of the catastrophe from an expert point of view, in which the subject is dealt with in a thorough and systematic manner to which we have become accustomed in the Committee's reports. But the chief value of the latest "Red Book" of the British Fire Prevention Committee is not in its retrospective aspect but in the suggestions as to safeguards at future temporary exhibitions set out in the form of model regulations.

Temporary exhibitions are usually housed in structures easily destroyed by fire, and necessarily contain much valuable property, often—as at Brussels—irreplaceable. Any extent of insurance, and of a highly inflammable nature. Hence it is highly desirable for the sake of property and the continued success of exhibitions (to say nothing of the danger to life) that every possible precaution should be taken to prevent the outbreak of conflagrations and to limit their extent should they occur. We do not desire to minimise the duty of exhibition promoters to prevent by every means in their power the loss of life, but the risk of this is usually small even when fires occur, as exits are ample.

But the British Fire Prevention Committee has not omitted the consideration of this important matter, and recommends that sufficient exits should be provided so that the maximum distance of any point in the interior of the buildings to the open should be eighty feet, that two routes of exit should be available, and that the exits be clearly indicated.

The provision of safeguards divides itself naturally into prevention, limitation, and extinction of outbreak. Prevention is concerned primarily with the causes of fire, secondarily with the construction of the exhibition buildings. The causes of fire are fully dealt with in the Red Book, and include open lights, smoking, waste paper and other material, lightning, stoves and flues, electric current, and other illuminants, with respect to all of which, and, if somewhat drastic, recommendations are made.

In connection with the construction of buildings, these are divided into classes as affording (1) practically "No" fire resistance, (2) "Temporary" fire resistance, (3) "Partial" fire resistance, (4) "Full" fire resistance; and the various descriptions of exhibits for which buildings of each class may be suitable are defined.

The limitation of outbreaks depends partly upon the restriction of the sizes of risks, and it is recommended that no one building should exceed in cubic content five million feet, and that no one part of any building should exceed one million cubic feet unless separated from the adjoining part by a wall of "partial" fire resistance, the openings in which are suitably fitted with doors or shutters. It

is also advised that buildings of more than one million cubic feet should be at least sixty feet distant from any other such building, that buildings of half a million cubic feet upwards should be at least forty feet away from any other building. Permission is suggested for small structures of under a hundred thousand cubic feet to be connected up or adjoin without being separated by walls of "partial" fire resistance, if the total cubic extent of these adjoining buildings in any one block does not exceed half a million cubic feet and such blocks are not less than forty feet away from any other such block or building, but this condition should not be applicable to any building used for side-shows, theatrical purposes, or a restaurant having a seating capacity of over 300 people. These small structures, it is advised, should not be less than twenty feet away from any other building unless they form part of a block of half a million cubic feet. Buildings containing irreplaceable exhibits, administrative offices, post, telegraph, or telephone offices, police or fire stations, should not be less than double the distance from other buildings of the figures generally applicable.

Limitation and extinction of fire outbreaks are to a certain extent overlapping divisions of the subject of the report, and the Committee's recommendations as to fire alarms, control service, and fire service apply to both. Fire alarm points should be numerous, but the Committee does not consider that automatic fire alarms are necessary as a general rule if the watching service is properly organised. It is advised that all fire alarms should communicate with the exhibition fire stations, watch and police offices, ambulance office, electrical, gas, and water supply centres, and the exhibition administrative offices.

A very important part of the Committee's recommendations is that denominated the "Control Service," which embraces the personnel entrusted with the prevention and limitation of fire outbreaks. The duties of this personnel are divided into two distinct departments: (1) inspection, and (2) watching. A high degree of efficiency would be the result of the advice given as to the organisation and training of this control service, which it is stated should be brought up to full strength two months before the exhibition opens and be continued at that strength during the month following upon the closing. Detailed advice is given as to the organisation and training of this service.

Full instructions are included as to the provision of water supply, hydrants, &c., to avoid failure, in which it is urged that there should be two primary sources of supply. The Committee in their tests have had considerable experience of "extincteurs," or liquid chemical fire extinguishers, of hand grenades and powder extinguishers, and it is instructive therefore to note that all such "first aid" apparatus is strongly deprecated for exhibition buildings. The older-fashioned water buckets are recommended.

The fire service it is advised should comprise officers and men of the local fire brigade, strengthened during the six months preceding the exhibition. The British Fire Prevention Committee and its chairman, Mr. EDWIN O. SACHS, are to be congratulated on the well-thought-out scheme of safeguards against fire, which should be valuable and obligatory for all temporary exhibitions.

NOTES AND COMMENTS.

THIS year's report of the Council of the City and Guilds of London Institute contains the record of the granting of the Supplemental Charter making the City and Guilds College a part of the Imperial College of Science and Technology, and to include the whole of the Engineering Department of the Imperial College. This change seems to imply the removal of the chemical department from the Central Technical College. The report notices with regret the continued diminution in the entry of students at the Technical College, Finsbury, which appears to suffer from depression in the electrical industries, competition of other technical colleges, and the desire of students for University degrees—an unfortunate result of the modern craze for examinations to the Finsbury College, which has always placed education before examination. The South London School of Technical Art has continued with about the same number of students as in the two preceding years. In the department of technology, the examination branch of the Institute's work, there has been a marked increase in the number of candidates, although the percentage of failures was slightly higher.

THE Photographic Survey and Record of Surrey continues to make good progress as detailed in the ninth annual report of the Council. In the section of architecture, 177 prints have been contributed during the past year, including records of some portions of the county that have hitherto been but scantily represented or entirely unrepresented in the Survey. Among these latter have been Chertsey, Frensham, and Churt. In the section of art and literature, Mr. J. KENRICK has again presented a very large number of photographs of water-colours by H. PETRIE, representing the churches of the county, and also other scenes in it painted between about 1795 and 1810.

THE *Art Journal* reproduces some of JOSEPH PENNELL'S lithographs of New York, in which one cannot but feel that the artist has endeavoured to conceal the ugliness of his subject by an impressionistic rendering. An appreciation of the work of W. ROBERT COLTON, A.R.A., is well illustrated by excellent photographs of some of the sculptor's most notable works. An article on "Domestic Decoration" is naturally concerned with architecture, and examples of the work of Mr. G. L. SUTCLIFFE, Mr. E. GUY DAWBER, and Mr. W. H. ROMAINE-WALKER are illustrated.

THE most important article in this month's *Connoisseur* is on Nailsea Glass, by H. ST. GEORGE GRAY, and an architecturally-interesting one is that on "The House of the Visitation" at Bruges, albeit the illustrations are chiefly those of the wall paintings. A fine coloured plate is given of a drawing of the Dymoke suit of armour at Windsor Castle. The forthcoming Coronation of King GEORGE V. lends point to a descriptive and illustrated article on a picture roll representing the procession arranged for the coronation of King GEORGE IV.

THE Dean and Chapter of St. Paul's Cathedral have wisely applied for and happily obtained a faculty empowering them to make excavations in the consecrated ground around the building to determine the nature of the

foundations and soil, with a view to forming a reliable judgment on the effect of the proposed St. Paul's Bridge upon the stability of London's metropolitan cathedral. There is undoubtedly just reason to fear that the tramway scheme which lies at the bottom of the St. Paul's Bridge project will endanger the safety of St. Paul's Cathedral and the Dean and Chapter are doing no more than their duty in endeavouring to obtain reliable information.

THE Library, Museums, and Arts Committee of Liverpool Corporation, in rejecting a proposal for an Art Union, on the ground that it might introduce "the thin end of the gambling wedge," afford us some amusement when we remember that their city holds a busy cotton exchange, where "futures," we believe, are quite as large an element as "spot" transactions, and did house some of the biggest bookmakers in the country until foreign residence seemed more congenial. The plea of the advocates of the Art Union that it might help to remove from Liverpool the stigma of being a bad market for modern pictures is clearly well founded.

IN *The Antiquary* Mr. J. TAVENOR PERRY suggests a derivative connection between the use of lions or other animals as a decorative support for the pillars of churches in Italy and the Hittite sculptures described by Professor GARSTANG. An interesting article is commenced by Mr. W. RAVENSCROFT, F.S.A., on the church of All Saints, Milford-on-Sea, Hants, with an attempt to explain the peculiar features of the plan of this church.

IT is interesting to hear of the discoveries that have been made in connection with the operations of the Office of Works at Holyrood, where preservative measures have been in progress at the ruins of the Chapel Royal. This was the nave of the abbey church built in the twelfth century by DAVID I., and reconstructed in the fifteenth century by Abbot CRAWFORD. Now the foundations of the ancient choir and north transept have been laid bare, and in the middle of the choir space utilised as the site of the mediæval church have been discovered remains of what appear to be the foundations of a Saxon or Culdee church. The masonry used in the construction of the foundations of the great thirteenth-century abbey church consisted of large square stones; the foundations of the earlier structure were built of natural stones and round boulders. The remains of this supposed early Christian church show that the structure was not of great dimensions—that, in fact, it was a mere cell. But beyond this is the revelation to the south of this early building of an early Christian place of burial. A large number of graves were found. Their existence anterior to the erection of the great abbey was determined by the fact that the foundations for the mediæval church were found to have been cut right across one of the graves. Moreover, in no case was anything of the nature of a "cist" or coffin found, the bodies having been put into the ground uncased, and in most instances rough slabs of stone placed over the grave. On one cover-stone found the name "SIBILLA STRATUN" appears, who may have been the SIBILLA who was the queen of ALEXANDER I., although tradition credits one of the islets of Loch Tay as being her last resting-place. The excavations which have exposed the foundations of the choir and north transept of the abbey church have served to settle one question in regard to which archaeological experts have taken leave to differ—namely, as to how the eastern end was finished. It was thought by some that the choir was Norman in style of architecture, with a circular apsidal end. That controversy has been set at rest by the exposure of the foundations showing a square eastern termination. The position and general outline of the chapter-house, with its central pillar in relation to some of the flying buttresses, have been clearly defined.

CHALDON AND MERSTHAM.*

REAT rolling chalk downs, masterpieces of green and white, with little villages nestling in the wooded folds of the hills, Coulsdon, Chipstead, Chaldon, and Merstham, our fathers built them. And we to-day show our appreciation of these healthy highlands chiefly, it would appear, by building palatial asylums in the most conspicuous spots. It is almost ashamed to lead you down one pretty lane this afternoon lest it might seem an insinuation on your sanity, there to right of us and to left of us were magnificent and inviting houses of the mentally unsound. But now to glance back a few centuries to the historic past. Perhaps the most interesting scene we may picture in connection with our churches of Chaldon and Merstham will be in connection with the Pilgrims' Way—"The Old Road" as described by Mr. Hilaire Belloc with such fascination. Picture, then, a group like Chaucer's, though we shall, of course, remember that his Canterbury Pilgrims were not travelling this road. First, then, his Knight, hardened by many a crusade, clad in rustian cassock; his Friar wanton and merry, his Merchant clad in motley colours, with forked beard and Flemish beaver hat; his Shipman from the West all brown of hue by many a summer sun, then Millers, Men of Law, Clerks, Squires and men, a brave and hearty company. See them winding down the valley skirting what is now Gatton Park, arriving at the Pilgrims' Well, there filling their gourds at the muddy little spring below the church. Then they will stroll up to bow their knees and say a prayer to St. Katharine of Merstham, singing with interest at the south wall of her church covered with paintings of the life and death of the martyred St. Thomas of Canterbury to whose shrine they were bound. Then on and over the downs to Chaldon ran the Pilgrims' Way; there they will gather and explain to one another the

parts of a large parish church, nave and double aisles, chancel, south chapel and south porch. Originally doubtless just a little Norman nave and chancel, the aisles were added in the twelfth century, when additions were made and the wall-painting executed. The foundation of what appeared to be outer walls were discovered extending between the arches of the south aisle. In view of the fact that the tower and spire were an addition in 1808, we may be thankful that they maintain the simplicity and scale of the rest of the church. We might have thought that one apostle would have sufficed as patron saint of so small a church, but the kind offices of St. Peter and St. Paul are both enlisted.

Apparently St. Peter has lost his bell, but that of St. Paul, inscribed "Campana beati Pauli," now hanging in the porch, claims to be the oldest in the South of England; it is granted that it is the oldest in Surrey. The pulpit of Jacobean date has interesting strap ornament. There is also a well designed memorial tablet of about the same date with the quaint inscription:

"Good redar warne all
Men and woomen whil they
be here to be ever good to
the poore and nedy. The
poore ever in this
Worlde shall ye have. God
grante us sumwat in
stoore for to save. The cry
of the poore is extreme and
very sore. God grante us,
to be good ever more. In this
worlde we rune oure rase
God grante us to be with
Christ in tyme and space."



CHALDON CHURCH.—From a Photograph by Mr. H. F. MURRELL.

details of the Ladder of Salvation, being probably really scared at the sight of the hindering demons and really cheered at the sight of the helping angels. Apart from pilgrims, this little hamlet of Chaldon is and has been for many centuries wonderfully isolated considering its proximity to the great metropolis, a lonely wold village. Who, on passing this queerly simple, doll's house of a church, would imagine that it was honoured with the possession of perhaps the most interesting wall-painting in Northern Europe? No upstart at this Chaldon; indeed it is probable that the Roman road ran through here from Godstone to Woodcote, a theory strengthened by the discovery of the remains of a Roman villa in a valley south of Chaldon. Then later it is mentioned in Domesday as Chalvedone, derived from Anglo-Saxon Cealf-un, probably Calf-down. In a charter of Frithswald, dated 1027, "apud Chepestede cum Chalvedene" were granted to the monastery of Chertsey, a grant confirmed by King Eadgar in 1057, and in 1062 by King Eadward. Later the Covert family, who came over with the Conqueror, held part of the manor. The little church, so small in scale, has yet all the

The gratitude of all archæologists must for ever be due to the Rev. H. Shepherd, the Rector, who in 1870, during a restoration, caught sight of some colour under the whitewash on the west wall. His efforts were rewarded by the discovery of the famous painting 17 feet 2 inches by 11 feet 2 inches. There were apparently traces of painting on the return walls and piers next to the west wall, but these were unfortunately destroyed during the Rector's absence. First may I trouble you with a foreword on mediæval paintings in general. Speaking of St. Mark's, Venice, Mr. Ruskin says: "I have above spoken of the whole church as a Great Book of Common Prayer; the mosaics were its illuminations and the common people of the time were taught their Scripture history by means of them more impressively, perhaps, though far less fully than ours now by Scripture reading. The walls of the church necessarily became the poor man's Bible." What the walls of St. Mark's were to the poor Venetian, what the great didactic sculptures of the cathedrals were to the French peasants, just that were the walls of St. Peter and St. Paul, Chaldon, to the clophopper of the Surrey wold. And need we pity him? He has in his picture the complete Bible story in outline and indeed a great deal else thrown in. It appears

* Read at a meeting of the Upper Norwood Athenæum by Mr. F. Franklyn Murrell, A.R.I.B.A.

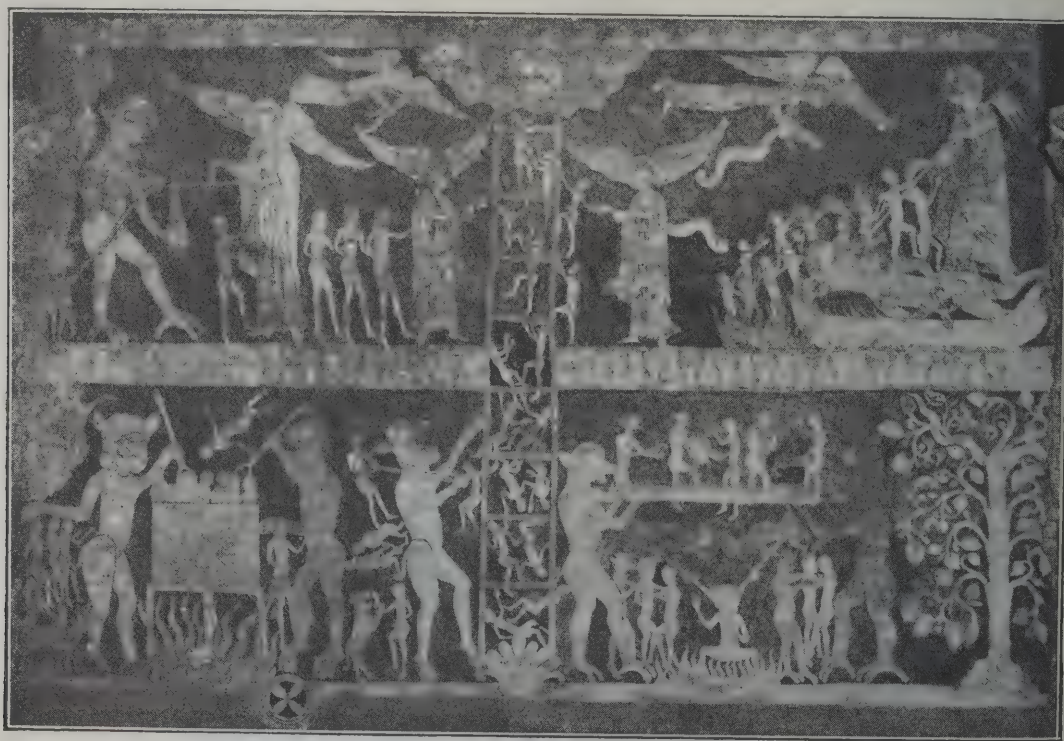
evident that the picture was painted by a monk; its morals, indeed, are so exacting, he should have been a Puritan. Its probable date is about 1170, or a little later. The scheme of the painting, as we have seen, is a systematic representation of the Ladder of Salvation. "The Ladder of Salvation of the Human Soul and the Road to Heaven" is the title given to it in the "Guide to Paintings of the Greek Church." The idea of the ladder is evidently based on that of Jacob's dream. It is not to be supposed that any single monk suddenly imagined the whole scheme of the picture, but rather that he was following a common ecclesiastical tradition. I think you will agree that the name is unsuitable in so far that though the souls in the lower portion of the picture look most surely doomed those in the upper portion appear to have escaped, as it were, by the skin of their teeth.

In the lower right-hand section, in a beautifully decorative tree of life, winds the serpent, the cause of all the trouble. In the same section the Eastern torture of the bridge of spikes is presented, in endeavouring to cross which offenders, probably against Mother Church, are having a bad time. Mr. J. G. Waller suggests these figures as a blacksmith compelled to forge a horseshoe without a forge, a mason and a dishonest spinster; another figure is identified as having a

evident that the painter was chiefly anxious to point his moral, rather than to decorate the west wall of the church.

Merstham is chiefly noted to us of the building trade for its excellent limestone, to be exact, a greyish, greenish-arenaceous limestone is obtained here—you will have noticed that the church is partly built of it. There are various explanations of the origin of the name Merstham—Mearsoetham, *i.e.*, people of the marsh or boundary, or alternatively: Mère is defined as a marshland or boggy swine-walk, and stan as stone, or house of stone.

From Domesday we learn that the living was held by the Archbishop "de vestitu monachorum," supposed to mean for clothing the monks of Canterbury. The lord's rent was twenty-five fat hogs and sixteen lean ones. The living is still in the hands of the Archbishop. In the reign of Edward I the right of free warren of lands at Merstham was granted to Edmund de Passeleye. Practically the whole church dates from the twelfth century. Perhaps the best way to describe the church would be to see it through the eyes of our Canterbury Pilgrim of the late Chaucer period. After filling his gourd at the Pilgrims' Well and tying his nag, he climbs the steep bank and finds the elegant church of St. Katharina well set up on the hill and commanding a fair prospect. Like a well



WALL PAINTING AT CHALDON CHURCH.—From a Photograph by Rev. G. E. BELCHER.

stolen tithe of milk. Beneath it is the figure of Usury, a common vice of the Middle Ages; his eyes are being ruthlessly gouged out by tormenting demons, while on either side are figures representing "illicit affection." To the left of the ladder the burning caldron is reserved for patricides and fratricides, while to the left again, with poetic justice a wolf is gnawing the feet of ladies who have been too fond of dancing. The lady to the right of the caldron might well prove a warning to modern society; her hand is being bitten by a dog, presumably because she has in life indulged these pets to excess. In the upper right-hand portion is the Harrowing of Hell. The figure of Christ is represented as vanquishing the Devil, who is bound and lying on a primitive boat on the Lake of Fire. The Patriarchs are joyfully welcoming the Saviour. Enoch and Elijah are quaintly having a leg up the side of the ladder. To the left the interest centres on St. Michael weighing souls, the justice of his balance being hindered by a particularly objectionable demon on the left. The three Marys of the Gospels, looking particularly nude, are being directed to the ladder. Nothing is omitted, even the penitent thief being carried by a special angel to Paradise. The Maltese Cross at the bottom is the Dedication Cross.

The picture is painted in tempera; the colours are red, yellow ochre, native cinnabar and white. In execution the picture is a curious mixture of the crude and the refined. The figures of Christ and the Angels have real decorative value, while the demons are intentionally grotesque. It is

brought up member of the Athenæum he first wanders round the exterior of the church, and is especially delighted by the tower, with its shingled broach-spire similar to many in the fair county of Surrey. The west door of the tower is enriched with delicate dog's tooth carving of a unique pattern resembling that in the neighbouring church of Chipstead. Our pilgrim enters the church by the porch on the south side, leaving there his cloak and sword, bowing piously to the little statue in the niche over the inner door. Within he is astonished at the richness and beauty of the structure; walls and pillars blaze with colour, on the pillar near him is a bishop in the act of benediction. Then beneath the chancel arch stretches a screen of woodwork rarely carved, above it the Holy Rood is dimly seen. At the west end he notices a huge black font of Sussex marble similar to one he has seen at Shere, in Surrey. He is surprised at the curious windows of the clerestory over the arcade; some have four cusps, some have three, and all are set immediately above the columns underneath. But above all, he marvels at the carving of acanthus leaves on the capitals of the chancel arch; he has heard, indeed, of carving of this kind at the Cathedral Church at Canterbury, but most this reminds him of carving he has seen when at the wars in France. Then how beautiful is the Holy Sanctuary itself, surrounded by an arcade of pointed arches supported on shapely shafts and down in the corner a piscina, or rather one divided into two with rare carving under its basins. To the right of the chancel is the altar

f St. Katharina, about which lights are burning; behind is
er window with new glass of rich colour and figures of the
Virgin Martyr herself, then Maximin, our Blessed Lady and



MERSTHAM CHURCH.

From a Photograph by Mr. H. F. MURRELL.

er Son, and St. Peter. Around are fair paintings of the
te and sufferings of the blessed Katharina, yonder is her



INTERIOR OF MERSTHAM CHURCH.

From a Photograph by Mr. H. F. MURRELL.

statue beneath that canopied niche. To the left of the chancel
seen a chapel newly finished with a roof in the most

excellent fashion, with shapely king posts. And now it is
getting dark and our pilgrim will hie him to "Ye Feathers,"
minding him that the landlord is a right hospitable man and
his ale not to be despised.

Before leaving the church there are perhaps one or two
features of which a twentieth-century pilgrim ought to take
note which would not have been visible to his fifteenth-
century brother. The tower arch is rather a freak, the
centre key-stone is from old London Bridge; really this carved
fragment, apparently a boss, must be of considerable interest
and should have been preserved in some spot where it had
some chance of being examined. There is a most interesting
stone effigy of a London mercer, apparently Nicholas Jamys,
one of the four representatives of London in 1415. The
church has five old bells, one bearing inscription "Sancta
Katerina, ora pro nobis." The old clappers are preserved
in the church.

Among other brasses is one in memory of the Best family,
one of whom in 1534 left "oone shepe to the hye autar of
Chepsted" and others to Merstham, Gatton, and Chaldon.

In conclusion, we have visited two churches this afternoon
which perhaps especially give us a picture of the rich
medieval life of the thirteenth, fourteenth and fifteenth
centuries, the period which in our superiority we usually
designate "the dark ages." Perhaps it may be that the
more we learn the more we may appreciate that this time
was characterised by a courage, a piety, and an artistic
ability of which to-day, had we them in like measure, we
might well be proud.

MR. JOHN BURNS, M.P., AT THE ROMFORD GARDEN SUBURB.

ON Thursday of last week the House and Cottage Exhi-
bition at Gidea Park, near Romford, was opened by
Mr. John Burns, M.P. In the course of a spirited address
he said that a year ago they had laid the foundation stone of
the first house in this new community upon an ancient
estate. On that occasion he had ventured to ask everyone
present to give their hearty co-operation. First he had
appealed to the architects, and they had responded admirably.
Then to the builders and workmen, who were no small factor
in carrying out such a scheme; and these had contributed
their share too. And lastly he had appealed to the pro-
motors who provided the enterprise and the money; they
seemed to have risen to the level of the architect, the work-
men and the builders. The beauty of the site of this
new community must appeal to everybody. He could now
congratulate the owners on so liberally taking his advice,
and on having preserved the beauty and amenity of this
district by not cutting down more trees than was necessary.
This was as it should be, for nearly everything old was
beautiful, and as he was fast becoming a picturesque and
aged ruin himself he had a right to say that. But there
was a moral underlying the principle. The adaptation of
modern needs to old-world characteristics, the retention of
trees, flowers and shrubs, the right proportion of each, and
the application to them of the skill of the domestic architect
were assets which every nation should strive to retain. The
reason being that in these over-worked days the tendency
was for nerves to be wrecked, and there was no sedative
so good, no counter-attraction so great as beeches, oaks and
elms rearing their heads above houses. Therefore he was
obliged to the promoters for having taken a part in that
spirit.

A year ago he said there would be a good demand in Essex
for that kind of housing estate and community. Since he
had said it, how had things changed from the population
point of view as revealed by the preliminary figures of the
census for 1911? In the City of London, twenty out of thirty-
one parishes had declined in population, and there was an
aggregate decrease of fourteen thousand people in the last
ten years. At the present moment London possessed 50,000
empty houses, the former tenants of which to their credit
had found fresh fields and pastures new for themselves, their
wives, and their children. It seemed incredible that in the last
ten years from 13,000 to 15,000 families had moved out of
London into Kent, Surrey, Middlesex, and Essex, and while
the population of Inner London declined by 14,000 in ten
years, the outer ring of London has increased its population
by 700,000, and Greater London beyond that has increased
its population by 670,000. In this march of the multitude,
this flight of bricks and mortar, Essex has gained in popu-
lation 245,000 people, or 30 per cent. more than its figure ten
years ago. Essex was no longer "derelict Essex." The out-
ward population of London (coupled with a few enterprising
Scotch farmers) have removed that reproach. Essex now

vied with London as a place for houses, for which in the future those erected in connection with that exhibition would be the models and exemplars. Any architect, builder, or owner willing to erect a house below the standard set up at Gidea Park deserved to have the brokers in as possessing a vandal sentiment. Some people might ask, "Is it not a bad thing that London should diminish its population?" His answer was that men, like manure, were no good in heaps, and that they required to be spread over the ground. To accomplish this no fork was so good as garden suburbs. In ten years London's death-rate had diminished from 18 to 13 per thousand, or 32 per cent., by this redistribution of population. Better than that was the wonderful reduction in infantile mortality. In 1900 the infantile mortality had been 159 per thousand, now it is only 103. That was largely due to the improvement in housing. It was impossible to have strong men and noble, enduring women in slums where their strength is sapped. At the present moment there was a movement in the county for the provision of sanatoria in Essex. But how much better than sanatoria, how much wiser than the administration of medicine was the provision for good dwellings? But even with the white scourge this distribution of population has meant that it has diminished 34 per cent., whilst all tubercular diseases have decreased by a similar amount. This was mainly due to the foresight and oversight of the local authorities. The day when the London County Council took the electric tramway over Westminster Bridge, and the battle of the bridges ended in a victory for the people, consumption had notice to quit, the slums to disappear, and misery had its marching orders. Many evils due to overcrowding were put an end to by the extension of the tramway, train and tube facilities. Some might say there was some drawback to all this. He answered there was none so far as the general community were concerned. If fifty thousand houses were empty it was mainly because they were badly designed and worse built on wrong lines. If the owners were suffering his advice to them was to pull down all the basement houses in the metropolis, and then they should re-erect them as superior houses (as good as those at Gidea Park, if possible) consistent with the pockets of their tenants. It was only by such a step owners could compete with great modern estates and co-operative schemes.

In the past Essex had been too frequently alluded to as the Cinderella of the metropolitan counties. Surrey looked down upon it, wealthy Middlesex thought herself superior, while Kent plumed itself on being the garden of England. That was going to be true no longer. He wanted Essex to be, during the next fifteen or twenty years, in the forefront of the home counties for absorbing London's population. He did not want Greater London in the next twenty or forty or sixty years to grow up without plan, system, or method, without the harmony and the other qualities which can only be taken into consideration by the adoption of a big view of the question. London ought not to grow up lop-sided. Now that Essex was coming into its own he sincerely trusted that it would be an attractive, healthy place. But what about the future settlers? Essex was not merely a very healthy county; last year it was the healthiest county in England and Wales, taking into consideration its difficulties. A poet had told them that westward the course of empire took; but he wanted the trend of London to be eastward. If this were recognised it would mean that Essex would be in for a very good time so far as trade, commerce, and the other things which make a good community.

The opening of garden cities was, said Mr. Burns, becoming a weekly function of his. Nearly every other week he was going about opening garden cities, garden suburbs, or workmen's dwellings. It was true that in a number he had visited or actually opened the estates had been mainly for people highly paid, rather than for the artisan and the lower middle class. But statesmen have to look after all classes. In the last five years he had sanctioned loans for 180 housing schemes for workmen in both town and country at a cost of 1,250,000*l.* The State lends the money at the lowest possible rate of interest consistent with a fair return. He himself was against charity rents for rich or poor. If housing in the rural districts was a difficulty, as they had been told it was, he had a suggestion to make. The farmer should raise the labourers' wages by a shilling per week. The labourers should spend two or three shillings a week less on beer, and none of them should be so foolish as to bet. The saving thus effected would enable them to pay the higher rent needed for better house accommodation, and they would not be enemies to themselves, their wives, and children.

He had that day to give away a thousand guineas from the promoters of the scheme to the authors of the successful

designs, and the other winners of prizes. The general public were indebted to the promoters for stimulating architects to compete. In the old days of jerry-building the architect was never thought of, until the house, having been erected it was ascertained that the drains were bad. But they were going to change that now, and to reverse the process. By harnessing to domestic architecture of this price and accommodation so much beauty and so much taste the organisers deserved the grateful thanks of all. One hundred and fifty houses had been erected, and incidentally that meant that something like fifteen hundred to two thousand men had secured work during a difficult period of the year. The house had been planned with a view to giving greater comfort and convenience than the type of house hitherto favoured. They must bear in mind that a house should be a home rather than a dwelling. It should stand on a pleasant site and be more convenient to the wife and children. When he was a boy workmen's houses were more like a repository than anything else. The front parlour ought to be added to the living-room for it used to be scarcely more than a mausoleum for china dogs, wax flowers, and dusty antimacassars in his young days. Father himself was regarded with scant courtesy when he wanted to be there, for it was reserved for the doctor, the undertaker, and the insurance man. To be in the front parlour used to be like being in some West End drawing-room now, where you have to be a good "cover-point" or "half-back" in order to dodge the milk-stools. Consequently that afternoon they had to express their gratitude—on behalf of the general public—to the architects and builders responsible for the houses at Gidea Park, and to congratulate them on what they had done. The estate had risen to the performance of what had been predicted of it at an inaugural gathering nearly a year ago. He only hoped that the houses would go off quickly. The estate instead of being spoilt by having nasty shops dumped down indiscriminately, with their consequent slatternly effect, was to have its shopping centre in one corner. There was no detail of this character in its development which had not been organised and provided for. Nor was there any freak architecture. They were the most artistic and comfortable dwellings he had ever inspected, and he looked to Gidea Hall Estate to be a model and exemplar.

The prizes in the competition organised in connection with the Town Planning and Modern House and Cottage Exhibition at Gidea Park, Squirrels Heath, in the Romford Garden Suburb, were distributed by Mr. Burns. The assessors were Mr. E. Guy Dawber, V.P.R.I.B.A.; Mr. H. V. Lancaster, F.R.I.B.A.; and Mr. Mervyn E. Macartney, F.R.I.B.A. Class I. Detached house, to cost 500*l.*—first prize, gold medal and 250*l.* (No. 208), Mr. Geoffrey Lucas; second prize, 100*l.* (No. 240), Mr. Reginald T. Longden; highly commended (No. 43), Mr. Curtis Green. Class II.: Detached cottage, to cost 375*l.*—first prize, gold medal and 200*l.* (No. 273), Mr. C. M. Crickmer; second prize, 100*l.* (No. 291), Mr. Herbert A. Welch. Class III. for the best internally fitted cottage in above classes; and Class V. for the best garden design will be awarded early in July. Class VII., open to builders: for excellence of workmanship and construction in the erection of a cottage in Class I. or II.—first prize, gold medal and 100*l.* (No. 43), Messrs. J. W. Falkner & Sons; second prize, 50*l.* (Nos. 241 and 242), Mr. F. W. Jarvis. Class IV. for a town plan of Gidea Park—first prize, 100*l.*, Messrs. R. Dawe & W. S. Gibson; second prize, 50*l.*, Messrs. Geoffrey Lucas & T. A. Lodge.

AMERICAN ARCHITECTURE.

By FRANK M. ANDREWS.

(Continued from last week.)

FOR the first time on American soil there was to be produced in orderly triumph the majestic splendour of ancient Rome, of Italy, of the dreams of France, and these architects, recruited from the field of conventional daily routine, thus found in their grasp the opportunity to display to a great people the possibilities and meaning of the art of architecture.

To-day it is a thing of the past, ephemeral in its material existence, but everlasting in its message and impression upon the nation. With difficulty can you, to whom the tradition of your own land and the storied riches of Europe are familiar things, realise the revelation contained in this world of art, and its stimulus to our people.

Its direct influence is manifest in every important city of our land, by local agitation for civic beauty, by established

and projected control, and direction of the art expression of individual enterprises, by the popular demand for the beautifying of streets, the monumental groupings of public buildings, and the constantly increasing intelligence of popular architectural criticism.

A hitherto unknown language to the masses, this enterprise aroused in them a spirit of inquiry and appreciation, at with one great sweep of thought elevated the profession the artist and architect into a plane of equality with all of the utilitarian pursuits of a practical money-getting age. With a public thus instructed, characteristically eager to form itself of new thoughts and ideas, we find a typical response thereto through the columns of the daily Press, the advertising of the Fair itself, and the pages of our popular magazines.

Alert in their department of public activity, they were newly alive to this demand for knowledge, and, in turning over the files of the popular print of the day, one may be surprised at the volume and importance accorded to this subject. For the first time the profession found itself a firmly-established part of the general scheme of things, a factor of public interest, upon which rested the responsibility of interesting the intellectual and material growth of a community hitherto subjected to intelligent scrutiny and analysis of its work, and in a position to deal successfully with the influence of ignorant Philistinism.

These people of practical and materialistic habit of thought responded promptly to the realisation that here indeed was a new field of development, that paid big dividends in its effect upon the physical and moral welfare of both the present and future generations.

Search as you may the current files of thirty years ago in the Press of any community in our land, and no reference will be found therein to architecture or any other art as being of public import or interest. To-day our important metropolitan newspapers maintain a regularly-established department devoted to illustration and comment upon the current architectural products of their vicinity, and the newspapers of the smaller cities display a keen interest in their local art movement.

To me this is a fact of deep significance, knowing as I do the power of the public Press in our land, which not only informs and formulates, but likewise reflects public opinion. From this awakened artistic consciousness, no longer concerned with art as an abstract question but as a matter of practical importance, there arises a stimulus which imposes upon each architect, when dealing with an important project, a responsibility so seriously involving his own personal prestige as to remove him from the field of irresponsible effort. Our building regulations and various movements towards the establishment of art commissions as a part of the organisation of city, state, and national government, are effective in their way and undoubtedly important, but the final authority rests with an enlightened public opinion which is the product of the influences to which I have alluded.

While according to these influences their general force and direction, I cannot altogether subscribe to the characteristic attitude of the writers of books and essays about art as they apply it to architectural discussion.

We who have to deal with the everyday conditions of our art, and live with it constantly, know that our feet are mired in the clay of practical, materialistic, and unlovely things, which cannot be tossed aside like the painter's canvas or the sculptor's sketch, if we find our artistic progress impeded.

Our ability to apply our art, knowledge, and skill to these things should be, in a large measure, taken as a matter of course, and—like the ability to play the piano which a composer must obviously possess—a means to an end, in our use too often overwhelmingly utilitarian.

Those who review our work for literary purposes generally fail to penetrate this realm of professional routine and practical impedimenta, and we find them wandering about the abstract discussions of the studios, arriving nowhere, and quite as apt to be of harmful influence as otherwise.

It is my purpose, therefore, to discuss our contemporaneous work from this perhaps unimaginative and materialistic standpoint, as being essential to a correct conception of an important factor in the moulding and the formation of a typical American architecture, and without which cannot be truly appreciated nor understood.

I love to soar to the heights with an imaginative writer when addressing himself to our stubbornly practical art, for it does us both good, but unless he belongs to the Brotherhood, and, like myself, has to get back to earth again, the return trip becomes rather lonesome, particularly when I find

myself humbly surveying a lot of actualities that have not been with me on the voyage. I believe that these actualities, that are our common fate and with us every day, are unitedly a component force reacting upon our artistic desire and instinct, which will finally produce a resultant force that may become differentiated as an American style. Of these two forces the artistic theory has been pretty thoroughly exploited, but I believe that the workings of the force, which I term "actualities," should be accorded equally prominent attention. As to the resultant force, have we now in America that formulated habitual expression of feeling and characteristic assemblage of detailed forms—a vernacular if you please—or an evolved system of massing, grouping of parts, or of proportion having a sufficient individualism of our own, to be designated as an American style? Obviously, this resultant does not yet exist, and indeed may be a creature of very slow growth, but is certainly in the making.

In the buildings erected during the past twenty-five years we have run the gamut of practically all known architectural thought—have experimented with about everything this side of the Indian wigwam. This has been done, not because of any lack of inventiveness on our part, nor of imagination, nor, again, does it suggest any feeling of satisfaction with such a state of affairs. We realise that we are dealing with something much more important than passing fads in millinery, automobiles, or dress, and that eventually this indiscriminate borrowing of other people's architectural garments must be succeeded by a costume more fittingly our own.

Considering, however, the prevailing circumstances surrounding our profession throughout this period, it becomes immediately apparent that my previous observation is reasonable concerning the causative action of our practical "actualities."

The incredibly rapid growth of our cities, increase of population, the demand for a new equipment of buildings of every variety of use and purpose, the razing of existing buildings (products, perhaps, of a previous decade, but become obsolete and in the way of imperative necessities), constituted a movement of such overwhelming volume, to be accomplished in such a short space of time, as to crowd upon the shoulders of one generation of architects—who virtually at the same time were re-creating themselves—a variety and volume of new problems, complicated in their every practical aspect, and presenting an entirely new artistic field of attack, that perhaps would not have been an easy task for three generations of men well entrenched amidst familiar traditions.

Again, the entire absence of suitable precedent or style, and the presence of a prevailing and entirely new form of construction having no European prototype, obviously presented a free range for the exercise of individual fancy, resulting oftentimes in incongruity and an inharmonious eccentricity and lack of restraint. Owing to the ever-increasing height and the form of our buildings—a subject of great importance to which I shall give a special attention—new problems in the scale and application of detail were presented, which resulted in many architectural catastrophes, but are now better understood.

Due to all these conditions the successful architect found himself burdened with an extraordinary and varied assortment of buildings difficult to deal with at one and the same time, with the demon of American rush-methods relentlessly pursuing him—regarded by all of our highly-organised and efficient building trades as a sort of human rubber-stamp that worked automatically—what otherwise could he do but throw up his hands in despair, with one backward look of envy towards the old monks who constructed a few feet of cathedral in a generation, turn archæologist, and plaster his steel skeleton with a tidy arrangement of architectural dope, calculated to soothe the owner, the public, and the contractor, making everybody perfectly happy, but the poor architect being left alone with his sadly disfigured ideals?

It is my personal belief that this has had much to do with the exploitation of certain historical styles by several of our notable architects; to the extent that their names have become synonymous with those styles, as, for example, Richardson with the French Romanesque.

It is an undertaking that requires no small amount of executive ability and a highly-organised office to successfully manage this condition, and whatever tends to standardise and unify its efficiency must perforce be found and used.

Richardson, with his masterly knowledge of the style, was quite justified in his adherence to the Romanesque. It was not too violent a departure from the prevailing mode, was easily managed by the building trades, and suitable to the then existing range of available building material. How

clearly he perceived this is proven not only by his own work and that of his immediate successors, who were trained under him, but also by the complete collapse of the movement he established when it fell into the hands of the horde of imitators who neither saw nor appreciated the importance of this fact, and who, in attempting novelties of treatment without proper means at hand, helped it to an early death.

Our next important architectural revelation fared more fortunately by proving itself much more adaptable to our wants, and, dealing with an almost infinite variety of refined flexible forms easily applied, became the reigning fashion for an extended period, and is to-day reasserting itself in a salutary and refreshing way.

This revelation came through the work of White and of MacKim, who did not at first display a full mastery of the style, but temporised with a curiously interesting architecture of brick and a reserved application of Italian detail. They soon became the leading exponents of the Italian Renaissance, and since their output of residential, commercial, and other classes of work, was enormous, its educational influence with us must be counted of prime importance, and by their own good taste, fine sense of proportion, and full appreciation of the refinements of the style, they elevated our standards to a plane that will not be abandoned. In their extensive use of the Georgian period they reminded us of our own best tradition, showed us the value of simplicity, control of expression, and respect for architectural law and order. Office expediency is to me apparent in much of their work, particularly in their bold confiscation of entire architectural compositions, as, for example, in the Tower of Madison Square Garden.

With us the first important exponent of the modern French school of thought and design was Richard Hunt, and his work was of such volume, his clientèle so important, as to place him as one of the factors that shaped our tendencies. His earlier work adhered closely to the contemporaneous French Renaissance, but later his frequent and facile application of the style of Francis I. to noteworthy structures produced a widespread interest in the style. His high place is accorded him, not only because of the importance and quality of his work, but also for his sturdy maintenance of the best traditions of the French school, which now have become so important to us.

These men were great artists whose inspiration given to the young men of their day, now become the active men of this day, and to the whole trend of architectural thought in the official, governmental, and private life of our country, cannot be overestimated.

It is important that I refer to the aims, influence, and results of the system of architectural education prevailing in our colleges at home and of the foreign schools, notably that of the Beaux-Arts in France. Our courses are largely influenced by the Beaux-Arts system of instruction, and the theory of architectural training as formulated by it. Better than any other, it seems to us to concern itself with the broad principles of architecture, of the laws of composition, mass and proportion, the proper use of ornament, and emphasises the comprehensive grasp of problems of a nature comparable to our own. Furthermore, it has evolved a technical method of expressing these things so intelligibly that it is peculiarly suitable to the student, first grounding him in principles and then developing in him the power to individualise his interpretation of them. It is this insistency upon principles, and freedom from exploitation of any particular style or fad and the resulting flexibility, which popularises this school of training with us. The general result of this organised system of education is already apparent, and will, in our succeeding architectural generation, mark the greatest forward step in the right direction that we have yet known. Already the sobering influence of logical thought based upon this training in principles is visibly impressing itself upon our buildings, to their infinite betterment, and revealing a firmness of touch and a sure handling of design. There is forming a unanimity or trend of thought that is replacing the scattered individual assertiveness of style that was characteristic of former days, which presages a typical American mode that will continue and prevail as a foundation for consistent development. I believe that the English influence and traditions will be always more in evidence in our expression of domestic architecture, because our habits of living are modelled upon the English customs, with particular reference to country life. Our public buildings, and our disposition of the larger civic architectural problem, will undoubtedly exhibit more decidedly than ever the French influence and system.

In the field of commercial buildings, we have presented to us our own peculiar characteristic American problem, and out of it we are developing our one positive contribution to architectural form.

Unlike the Gothic architecture, with its organic unity of construction and design, it partakes of one characteristic Gothic quality, namely, the emphasis of the vertical and subordination of the horizontal line in composition. But again, it requires a superficial envelope, a simulacra including and concealing the real structural elements beneath, and in this respect becomes analogous to the arcuated construction of the Romans with its outward application of Greek forms and orders.

That we should have indulged in architectural foundations and fantasies with such a problem as this to deal with is not to be wondered at when all things are taken into consideration.

Our most unruly problem, the tall building, is, from many ways of thinking, the result of the logical working of the law of supply and demand. It is neither fantastic, avoidable, nor useless, will not yield to adverse legislation because public necessity formulates a public opinion that will not legislate.

It is amusing to read in the publications of fifteen years ago the diatribes against it and prophecies of its early extinction which were provoked by the modest fifteen or twenty-storey structures of that time. The architect of the then tallest building in New York announced in print his belief that the end of tall buildings was in sight. Structures of twenty-five, thirty, forty, fifty, and even sixty storeys have been the answer. It furnishes a typical example of practical necessity and mode of existence creating a movement which ends in something distinctively characteristic of a people, and in this instance steel-construction and the tall building is affecting us as did the round arch and vault of the Romans. The business centres of such cities as New York and Chicago, as created to meet the conditions of 1860 to 1870, were soon outgrown, and the necessity for larger and better buildings became apparent. The established business centres could not be, or, at least, were not moved, property values and the existing inter-relationships of those centres being of too great moment at the time.

This generally prevalent condition produced different immediate results in different sections of the country, which long since have converged into an established common practice.

In Chicago, we find that the direct causes that led to the first example of true skeleton construction were—(a) the necessity for increased height; (b) which the character of the supporting soil rendered impossible on account of the weight of the then prevailing type of massive masonry wall and interior columns, and which could not be overcome unless (c) a system of construction be devised stronger and of less weight than other types, which was accomplished by the device designated by us as the "Skeleton Steel Construction."

Had this been the only merit possessed by this type it might have remained a localism of Chicago, or, at least it would not have become the highly-organised, complex, and widely-adopted construction that it is to-day, practically amounting to our accepted type for commercial purposes.

(To be concluded.)

ILLUSTRATIONS.

CATHEDRAL SERIES.—ELY.—TRIFORIUM, NORTH SIDE, AND ORGAN LOUPE, LOOKING NORTH-EAST. SOUTH CHOIR AISLE, LOOKING EASTWARDS.

THESE views from photographs by Mr. J. W. Borlan are in continuation of our Supplementary Series from Ely Cathedral, and will be continued in a future issue.

"THE ARCHITECT" STUDENTS' SKETCHING AND MEASURING CLUB.

WE reproduce two drawings by "Finestra," to which prize was awarded in March last.

ROLLER SKATING PAVILION, Ayr, N.B.

THIS building has been erected from the designs of Mr. J. C. Reid.

HOUSE AT PRINCES RISBOROUGH.

THIS house was designed by Mr. C. W. Pike, from whose drawing our illustration is taken.

THE PRESERVATION OF ANCIENT MONUMENTS.

THE report of the Inspector of Ancient Monuments for the ending March 31, 1911, has just been issued.

It is prefaced with the following memorandum by Lord Beauchamp, the First Commissioner of Works:—

By Section 5 of the Ancient Monuments Protection Act, 1882, the Commissioners of Her Majesty's Treasury were empowered to appoint one or more Inspectors of Ancient Monuments, whose duty it would be to report to the Commissioners of Works on the condition of such monuments and on the best mode of preserving the same.

The first of such inspectors to be appointed was Lieutenant-General A. Pitt Rivers, the eminent archaeologist, whose services in the first years of the Act's existence were of great value. During the last ten years of his life, however, failing health prevented him from fully carrying out the duties of the post, and he acted almost solely in a consultative capacity for which he refused to accept a salary.

On his death in 1900, a successor was not appointed, and the work of inspection was in abeyance for a time. Informal inspections, however, showed the imperative need of action, and the Commissioners of Works accordingly appointed the late Assistant Secretary of the Department, Mr. James Fitzgerald, I.S.O., as Acting-Inspector.

Mr. Fitzgerald spent much of his spare time and most of his annual leave in what was to him a labour of love in every sense. By the end of 1908, all arrears of inspection had been overtaken and the work systematised.

Fortunately, the organisation of the Office of Works lent itself to the protection of these monuments. The department has branch offices in the great towns, with resident architect, clerk of works, foremen, &c., and it has a contractor in every district. It was impressed on the local officers that it was an important part of their duties to inspect the "ancient monuments" as well as new buildings in charge of the department.

In Scotland the board were particularly fortunate in the fact that the principal architect is an enthusiast upon antiquarian subjects.

Mr. Fitzgerald's zeal did much to stimulate local and municipal appreciation of ancient monuments and historic buildings widely scattered over the country, and this led to a marked increase of interest in their preservation.

In 1907 a Royal Commission was appointed to "make an inventory of the ancient and historical monuments and constructions connected with or illustrative of the contemporary culture, civilisation, and conditions of life of the people of England, excluding Monmouthshire, from the earliest times to the year 1700, and to specify those which seemed most worthy of preservation," and Mr. Fitzgerald took an active part in the initiation of the Commission's labours.

The excellent work done by Mr. Fitzgerald was unfortunately brought to a close by his death in the spring of 1909, and for a year the Commissioners were without an adviser in the difficult and responsible task of inspecting and maintaining those ancient monuments and historic buildings already in their charge, and in the still more onerous responsibility of negotiating the acquisition of monuments and buildings, the owners of which desired to transfer the care of their property to this department.

In view of the urgent necessity for a careful and continuous watching of the interests involved, Mr. Harcourt urged upon the Commissioners of His Majesty's Treasury the imperative need for the appointment of an inspector, and Mr. C. R. Peers, M.A., Secretary to the Society of Antiquaries, was appointed accordingly on March 25, 1910.

Mr. Peers in his report says:

I. The number of Ancient Monuments and Historic Buildings now under the care of the Commissioners of His Majesty's Works and Public Buildings is 104. The extent of the work is, however, inadequately represented by a statement of numbers, as a single standing stone must be counted as one monument equally with such an important group of buildings as Dover Castle.

II. They are divided into two classes:—

(i.) Monuments in private possession transferred to the charge of the Commissioners under the Acts.

(ii.) Monuments which are the property of the State.

The large majority of Class (i.) is prehistoric, no monuments belonging to the historic period having been qualified for State protection before the passing in 1900 of the Act amending the Ancient Monuments Act of 1882.

A full list of the monuments is given at the end of the Report, but they are briefly analysed as follows:—

(a) Prehistoric Monuments:—

	England and Wales.	Scotland.
Circles and standing stones ...	10	4
Dolmens and chambered mounds ...	13	3
Earthworks ...	5	4
Brochs, groups of hut circles, &c. ...	1	5

(b) Historic Monuments:—

Castles (masonry) ...	13	9
Earthworks ...	1	1
Ecclesiastical buildings ...	1	18
Domestic buildings ...	1	5
Town walls and gates ...	2	—
Sculptured and inscribed stones. (Single or in groups) ...	1	7
Other monuments ...	—	1

III. The number of monuments which have been placed under the protection of the Ancient Monuments Acts during the period March 25, 1910-March 31, 1911, is 15. Of these, 10 are in England and Wales, and five in Scotland.

They comprise the following prehistoric monuments in Anglesey: Standing stones at Penrhos Feilw and Tregwhe-lydd, dolmens at Bodowyr, Din Dryfol, Lligwy, Presadded, and Trefignath, and hut circles on Holyhead Mountain. In Orkney they are the Dwarfie Stone, Hoy and the Chambered Mound of Maeshowe.

The historic monuments are:—Eynhallow Church, Noltland Castle and Pierowall Church in Orkney; the Abbot's Fish House, Meare, Somerset, and part of the earthwork known as Skipsea Brough, Yorkshire.

Another section of the Edwardian town wall at Berwick-on-Tweed has also been brought under the Acts.

Of these monuments, 14 belong to Class (i.) and one to Class (ii.).

In addition to these, the transference of a considerable number of other monuments, offered to the Commissioners by their owners, is now under consideration.

IV. The condition of the monuments is, on the whole, satisfactory, though it is impossible with the funds available to put in practice as thorough a scheme of preservation as could be wished.

Among the works carried out this year the following may be noted:—

Arbroath Abbey.—The pointing and making good of decayed stonework has been continued. After negotiations with the Town Council, arrangements have been made for inclosing the remains of the chapter-house, &c., now much decayed through neglect.

Beaulieu Priory.—The walls and grounds generally have been cleared of rubbish and rank growth, and negotiations have been proceeding with the object of improving the boundary walls.

Berwick-on-Tweed Ramparts.—The re-pointing of ancient masonry, and general works of maintenance have been continued, an additional piece of Edwardian wall having now been transferred under the Ancient Monuments Acts.

Cambuskenneth Abbey.—The work of laying bare the ancient foundations is proceeding, and where necessary the masonry is being re-pointed.

Carisbrooke Castle.—The re-pointing of the walls is proceeding, the north-west bastion and adjoining defences being now under repair, and a good deal of ivy has been removed from the castle walls. Steps are being taken to prevent the scribbling of names by visitors, a disfigurement to which this castle is peculiarly liable.

Carnarvon Castle.—A very large extent of wall surface needs re-pointing and clearing of weeds and ivy. The walls from the Queen's Tower to the Queen's Gate have been cleared and pointed during this season, and the arch over the Queen's Gate secured by grouting.

Broch of Clickamin.—Exploration continued and some interesting outworks exposed. The question of the permanent treatment of the exposed works is now under consideration.

Maiden Castle, Dorchester.—The damage done by rabbits to the earthworks of this prehistoric hill-fortress is considerable, and continual care is necessary, as it appears impossible to exterminate the colony. A breach made in the chalk ramparts widens yearly, and would in the end bring down the whole face of the slope. The worst places are being made up to the former contour, the chalk being held in place by hurdles till the turf shall have grown over the new surface.

Dover Castle.—The exposed position of the Castle makes small repairs constantly necessary, but the buildings are, as a whole, structurally sound. The immense weight, however, of the iron water tanks on the roof of the Keep and its fore-building must be a very severe strain on the ancient walls,

and there are some signs of settlement in the chapel which occupies the fore-building. The walls of the church of St. Mary, in spite of careful pointing, are so damp that the plaster on them is rotten, and the mosaic in danger of becoming loose. Better ventilation will be to some degree a remedy, but a more effective system of keeping out the weather must be devised. The gatehouse of the moat bulwark and the foundations of the round church on the western heights are now, after a period of neglect, efficiently cared for.

Dunfermline Abbey and Palace.—The work of improving the amenities and exposing the remains of the cloister, &c., has proceeded at the expense of the Carnegie Dunfermline Trust. The re-pointing, &c., of those parts of the buildings in charge of H.M. Office of Works has been done where necessary.

Edinburgh Castle.—Work has proceeded continuously in the way of re-pointing the ancient masonry and generally preserving what is of historical interest.

Egilsay Church, Orkney.—The walls of the nave and chancel and round western tower have been carefully pointed, and are now in sound condition.

Elgin Cathedral.—The re-pointing and repairs to stonework have been continued, and the ground levelled so as to improve the general appearance of the site.

Fortrose Cathedral.—The re-pointing of the chapterhouse is finished, and the remains of the south aisle are now receiving attention.

Glasgow Cathedral.—The very important and costly work of strengthening and securing the ancient wooden roofs of the church is proceeding. These are of the same character throughout, and probably date from the 14th century, a most remarkable survival in a church of this scale. The construction is one which throws considerable strain on the walls and the roofs are, in consequence, somewhat spread and dislocated; but the oak timbers, considering their age, are in good condition, and when strengthened by steel principals, plates, and purlins, according to the scheme now being carried out, should last for many years.

Vale Castle, Guernsey.—The condition of this building is less satisfactory than that of any other under the care of the Commissioners. Part of the curtain wall fell in June, 1910, but has since been repaired, and the castle ditch has till within the last few months been filled with rubbish from the adjoining granite quarry. It is hoped that during the current year the site will be brought into a condition more suitable to a State-protected monument.

Holjrood: The Chapel Royal.—The re-pointing of the masonry is proceeding, and the cleaning of the incrustated stonework has revealed the 13th century carving of the capitals in wonderfully perfect condition. Measures continue to be taken for the preservation of the carvings on the west front to which the existing atmospheric conditions are very harmful. The vaulting of the south aisle of the nave has been cleared of rubbish, and the broken modern slating replaced by Caithness stone slates as originally used; the foundations of the presbytery and north transept have been exposed, and the work of banking, &c., connected with this is still in progress.

London: The Tower.—Surface decay is, and will doubtless long continue to be, a serious problem at the Tower, for as yet none of the many preservatives which have been used on decayed stonework have been able to resist the London atmosphere. Structurally, however, the buildings afford little or no cause for anxiety. The archways of the Middle and Byward Towers having been damaged by the hoods of wagons, the passage through them of all wheeled traffic is now forbidden by order of the Deputy-Governor of the Tower. Arrangements are now being made for the systematic photographing and more effective preservation of the long and interesting series of prisoners' inscriptions which occur throughout the ancient buildings. The work of removing from the ancient walls the casing of small flints in cement, which is both disfiguring and dangerous, is proceeding, and the old surfaces are being carefully pointed. The monuments in St. Peter's Chapel have been cleaned and securely fixed, and others of considerable artistic merit which had been removed to the crypt are being brought back into the chapel. The three wells in the Tower have been cleared out and examined, and prove to be of much interest, that in the White Tower being lined with 12th century masonry, with the original wood templates still in position at the bottom.

Newark Castle, Port Glasgow.—The re-pointing of masonry and repairing of roofs with more suitable slates has continued, the windows blocked up with brickwork or rubble have been re-opened, the Great Hall cleaned out, and the stonework repaired, exposing the fine stone mantel, &c.

Richmond Castle, Yorkshire.—The curtain wall on the east side of the castle, parts of which were in a dangerous state, has been repaired and is now in satisfactory condition, and the accumulated soil on its inner face has been removed. But much more work of the same kind is needed on the south and west before the buildings can be considered sound. Robin Hood's Tower, containing the 11th century chapel of St. Nicholas, has been repaired, the broken vault in the chamber over the chapel being made sound, the north-west angle of the chamber rebuilt, and the chapel floor cleared of a foot of modern rubbish.

Old Sarum, Wiltshire.—The excavations now being carried out here by the Society of Antiquaries are converting what was formerly a series of grass-grown banks into a site covered with the remains of the buildings, mostly of 12th century date, of the Castle of Old Sarum. In many places only the core of the walls remains, and though protected in every possible way will not long resist the action of the weather. A great part of the buildings can, however, be made permanently secure, and will add greatly to the interest of the place. The base of the Keep has been disclosed, flanked by ranges of rooms, one of them a chapel; a considerable length of curtain wall, two large towers, and two gateways. A number of pits, some of them of extraordinary size, and all lined with ashlar masonry, have been cleared out, and the castle well has been found, but not yet cleared.

Stirling Castle.—The re-pointing of masonry has been continued and the ancient Parliament Hall block completed, many interesting architectural details having been revealed; the buildings round the Lions' Den are now being re-pointed, also the Governor's House.

Stirling: Argyle Lodging.—Re-pointing and other repairs for the preservation of the ancient building are now proceeding.

Stirling: Mar's Wark.—The removal of cement and rough rubble from interesting architectural features is now in progress. After discussion with the town officials it has been agreed to remove an arc lamp-post, which is a great disfigurement, from the front of this ruin.

Tynemouth Priory.—The pointing of the ruined church is now finished and all is in good repair. The stonework is in many places much worn down, but rather by the force of winter gales than by any actual decay, and it is doubtful whether any treatment can stop the process, which in any case is very slow. The lines of the 11th century church, recovered by excavation some years since, are being laid down on the turf, and various improvements made in the general appearance.

Whithorn Priory.—The re-pointing and repair of the masonry after removal of shrubs, rank ivy, &c., from the walls, has been continued.

V. It having been reported that the Roman wall in Northumberland was being destroyed at several points by the whinstone quarries, Mr. Peers spent several days in the district in September, 1910. He says the destruction is not now rapid, but may at any time become so, and the whole character of the country, apart from its historical and archaeological value, would be entirely ruined in course of time. Something, of course, is lost every year as it is. Several of the Roman camps along the wall have been excavated at different times, and their buildings left uncovered, as at Aesica and Cilurnum; and Corbridge, which is rather a town than a camp, is now being excavated and parts of it are to be left exposed. The wall itself, originally about 18-20 feet high, as it is supposed, stands in parts to 4-5 feet, but in many places is reduced to a heap of stones. On the Clayton estate a good deal of it was set up again about 50 years ago, and is now again falling down and being repaired.

SCHOOL BUILDINGS IN SCOTLAND.

THE following circular has been issued to clerks of school boards by the Scotch Education Department:—"I am directed to inform you that the Department have had under consideration the report and abstracts of evidence submitted to the Board of Education by the Departmental Committee of 1910 on the cost of school buildings, and that they have made inquiry as to the character of the school buildings erected in recent years in Scotland. They find that there has been a considerable increase in building, due in a great measure to the providing of the necessary accommodation for instruction in practical subjects in the supplementary courses. They also find that in the interests of economy the Department's architect has not hesitated to approve, while their inspectors have been active in suggesting the use of light and economical structures of wood and iron or other

material when the additions do not form part of the main school building. Indeed, similar structures have been freely allowed for ordinary school purposes wherever there was evidence of a shifting population, or where, as in the Western Isles, the pressure of rates was heavy. It is well, however, to remember that the greater expense of upkeep upon such structures is undoubtedly a factor that has to be reckoned with in judging of their comparative cost.

"In addition to admitting freely such departures from the normal building regulations where justified by circumstances, the Department's architect has frequently been able to reduce the cost of buildings by suggestions as to the arrangement of plans, the character of internal fittings, and the nature of equipment to be provided. But, as is pointed out in paragraph 16 of the above-mentioned report, satisfactory results are generally obtained not by any remarkable devices (i.e., as regards materials and methods of construction) but by a careful attention to small savings on numerous items. Accordingly the Department would impress upon school boards and managers, and would ask them to impress upon the architects they may employ, the extreme importance of keeping this matter carefully in view in the preparation of plans and specifications and in the carrying out of work. While the Department's architect is always ready to give his assistance by indicating opportunities for saving as far as practicable, it would not be feasible for him in his examination of plans to go into these minutiae upon which so much of the possibility of economy depends. Boards should realise that in this respect it is upon them and their architects that full responsibility for any excessive cost of school buildings must rest. The Department also desire to draw attention to the fact that while the building rules lay down what may be regarded as the standard requirements of accommodation in schools of a normal type there is no intention of precluding the submission of plans which do not conform in all respects to these requirements. As a matter of fact it has been the practice of the Department to consider on their merits all proposals that involve a modification of the general prescription of the building rules, and it should be clearly understood that managers are at liberty to submit proposals for providing necessary school accommodation according to their own ideas of how that accommodation can be best and most economically provided, always granted that there is good reason to suppose that an efficient building for teaching purposes suitable to the circumstances of the case will emerge.

"I am to add that it would obviously be unreasonable to apply the building regulations strictly in the case of alterations to existing premises. In such circumstances special difficulties are invariably taken into consideration, and each set of plans is looked at by itself."

THE ILLUMINATING ENGINEERING SOCIETY.

A MEETING of the Illuminating Engineering Society was held on Monday, April 24, in the rooms of the Royal Society of Arts, Mr. R. J. Wallis-Jones taking the Chair, in the unavoidable absence of the President.

The SECRETARY read the minutes of the last meeting; the names of application for membership received since the last meeting and the names of applicants for membership already submitted and approved by the Council. These latter were formally declared members of the Society.

The HONORARY SECRETARY read a letter from the Secretary of the English Section of the Dresden International Exhibition of Hygiene, inviting the Society to appoint delegates to attend the exhibition, which will be opened in June. It was also suggested that if the attention of the members were drawn to this exhibition, suitable exhibits might be sent. Those wishing to attend the exhibition, or to exhibit, were asked to communicate with Mr. Gaster.

A letter was also read from the Royal Sanitary Institute in regard to their meeting at Belfast this year. The Society was invited to appoint delegates to the congress, and those wishing to attend as delegates were asked to communicate with the Honorary Secretary, Mr. Gaster.

The CHAIRMAN then called upon Mr. Haydn T. Harrison and Mr. P. J. Waldram to read their papers, which we have already printed.

Mr. A. P. TROTTER said that although he had not read the papers thoroughly, the subject of wall papers and the decoration of rooms was of vast importance, to which architects must be educated up. Probably a more shocking example could hardly be found in London than the room of the Society of Arts, in which, by the courtesy of that body,

they held their meetings. The subject could be dealt with mathematically by the well-known formula of taking the co-efficient of absorption as a percentage of pure white, perfect reflection being 100 per cent. It was possible to get nearly 80 per cent. with the very best white surfaces, and so on down the scale which had been given by several people, especially by Dr. Sumpner, who was the first to publish it, and to give a very practical scale of co-efficients of absorption. The total light in a room entirely covered with a colour absorbing a known percentage could of course, be calculated mathematically, but as with many mathematical problems, it was not possible to get at all the conditions, so that in practice it was necessary to have recourse to experiments. The only case which approximated to the actual conditions was the Ulbricht globe, and Mr. Waldram had been testing, in exactly the same way that he did some years ago, with model rooms. It seemed that if they took the model room and covered it with a very small amount of wall paper—a half piece would be ample—and put $\frac{1}{2}$ c.p. lamps to scale in the room, a very fair idea could be obtained of the effect of different wall papers. If they did not know to what extent the different colours would be used, and had to apply the mathematical formula, one for the wall, another for the ceiling, and another for the floor, it would be rather a serious matter, and therefore it was well worth while experimenting in a more elaborate way than even Mr. Waldram had already shown.

The CHAIRMAN, referring to Mr. Trotter's remark with regard to the hall of the Royal Society of Arts, said it was due to the room to explain that this particular colour had been chosen because so many things were shown around the walls at different times, and consequently the walls got knocked about very much, and were made dirty by the various workmen. Therefore the Society had chosen what was known as a very dull colour.

Mr. JUSTUS ECK (Union Electric Co.) said there could be no doubt about the great value of having clearly in our mind the difference between light and illumination. Mr. Harrison deserved their thanks for giving his table of terms. It was the duty of a Society like theirs to try and get clear ideas, and the distinctions given were exactly what were wanted. They wanted something which distinguished the secondary source of illumination from the primary, and he suggested that the Society should, in future, adopt the term luminosity as secondary illumination. The suggestion that makers of illuminating devices should send out polar curves was certainly a very good one, but it did not always appeal to the manufacturer because of the misuse of such curves by their trade competitors. Any manufacturer, however, was always pleased to give such information in response to a serious request from an illuminating engineer, who would put the results to a proper use, and not try to draw improper conclusions to the detriment of any particular piece of apparatus. He regretted that Mr. Waldram had been prevented by ill-health from completing his paper, because the subject was an exceedingly fascinating one. He hoped, however, that Mr. Waldram would on a future occasion communicate to the Society the results of some of the tests which he had in hand. He rather wondered why Mr. Waldram, in the second paragraph of his paper, selected the electrical engineer for adverse criticism. Surely there were consulting gas experts who should provide the same sort of information as was expected to be provided by the consulting electrical experts. In conclusion, Mr. Eck expressed the opinion that they could all benefit very greatly from the very interesting model shown by Mr. Waldram, and the demonstration of how it was used for screening off the light from different sections of a wall. He thought everybody must have been greatly impressed by the large amount of ingenuity shown by Mr. Waldram in solving what was an exceedingly difficult problem; many of them thought it could not be solved except at great expense.

Mr. VAL H. MACKINNEY (Holophane, Ltd.), referring to Mr. Harrison's remarks concerning the Holophane Lumeter, said that it must be clearly understood that to measure foot-candle intensity or illumination with this instrument the standard card must be used. Mr. Harrison had mentioned that it was necessary that the two surfaces, the one outside and the one inside, should be identical. He assumed that Mr. Harrison meant the surface brightness should be identical. He had tested that afternoon the surface brightness of the surface inside Mr. Harrison's own instrument, and compared with that of the standard surface outside, and from a set of readings, they obtained 5.3 for the inside surface, and 5.7 for the outside. He then tested the surface brightness of the inside of a Holophane Lumeter, and also

the outside, and obtained figures of 5.2 and 4.9. Therefore, no serious differences should be obtained from readings taken with Mr. Harrison's instrument, or with the Holophane instrument. The measurements should read true foot-candle intensity. There were several points in Mr. Harrison's paper which he wished to qualify. It was mentioned that reflectors and globes would enhance, in one way, the value of a lamp, that is, the direct illumination given, but he pointed out that it did, if correctly designed and put to a proper use, enhance the value of the light in other respects also. For instance, Mr. Harrison left out of account the need of avoiding glare, which would seriously interfere with the comfort of the eye in observing surroundings, but could be completely removed by the use of a suitable shade. This related to the physiological effect of opening and closing the pupil of the eye. Mr. Harrison mentioned that by toning down the surroundings, the eyes would open, and enable one to read more clearly, but when reading, the iris contracted automatically and therefore, darkening the surroundings too much would have the effect of setting up a want of muscular balance, and cause eye strain just as much as if the surroundings were bright. In the design of globes and reflectors of the Holophane Co., that had been taken into account. Certain facts, known to oculists and opticians, had decided that for general purposes about 25 per cent. of the light should go over the upper hemisphere, and 75 per cent. down. The oldest series of reflectors put on the market by the Holophane Co. reflected 75 per cent., transmitted 22 per cent. up over the upper hemisphere, and absorbed about 3 per cent. Mr. Harrison rather suggested that in certain cases it was possible that a reflector might do harm to the illumination on the horizontal plane. He himself had figures which showed that even under the worst conditions from the point of view of the reflector, with white walls and ceilings, a reflector was still of use, i.e. the energy consumed was reduced compared with the absence of a reflector. His experience went to show that with properly designed reflectors and globes, the value of the light unit was enhanced in more ways than one. Coming to the main portion of his remarks, namely, the tests which the Holophane Co. have been carrying out, mainly at the suggestion of Mr. Waldram, upon the effect of different coloured walls and ceilings upon light distribution, Mr. Mackinney said that these experiments were carried out in a room 8 feet cube, so arranged that it could be fitted with wall papers of any desired colours. The plane tested was 2 feet 8 inches above the floor level, and one lamp in the centre. The room was made of wood, with white distempered ceiling and walls, and the floor black. A number of tests were made, as shown in the accompanying table, with various coloured walls with a bare lamp, and

Source.	Conditions of Ceiling and Walls.	Quantity of Light (Lumens over Working Plane to the nearest round Number).			Energy Consumption in Watts to give flux of 100 Lumens over Working Plane.
		From Source, Refer distribution curve.	From Ceiling.	From Walls.	
Tungsten 200v. 55w.	White ceiling, white walls. Matt distemper on wood...	17	50	33	100
	Black ceiling, white walls. Serge cloth	17	33	50	110
	White ceiling, dark blue walls (mean reflective power, 22%)	17	30	47	117
	White ceiling, dark red walls (mean reflective power, 28%)	17	36	53	104
	White ceiling, light green walls (mean reflective power, 45%)	17	53	70	78
Lamp with Holophane reflector No. E 60	Ditto	60	40	100	55
Lamp with Holophane reflector No. I 60	Ditto	90	35	125	44
Lamp with Holophane reflector No. F 60	Ditto	120	36	156	35

also with three types of Holophane reflectors. By using a black cloth, it was possible to cover up and so block out the reflection from any part of the room, and thus analyse exactly how the total flux of light was derived. As a rule, Mr. Mackinney said, engineers, in predicting the results

in an installation, were content to allow nothing for the effect of reflection from surroundings, but he believed that as a result of these experiments it should be possible to foretell exactly what the results in an interior, having a paper of prescribed colour and reflection co-efficient, and equipped with a specified form of Holophane reflector, should be. It will be noted from the table that the total flux of light is accurately divided into the direct flux, and the indirect portion due to reflection from the various surfaces. It is interesting to observe how the various components change as different wall papers are employed, and the figures show that even in a room with light green walls and a white ceiling, a saving of over 30 per cent. can be made by using the correct Holophane reflector.

Mr. T. E. RITCHIE referred first to Mr. Harrison's remark that the angle of incidence of the light rays closely follows the cosine law for the greater part of the angular movement. He would like to know in what portion of the angular movement the cosine law was not followed, as this was a point of considerable interest. With regard to the references that had been made to the correctness or otherwise of the Lumeter photometer, he had recently had an opportunity of comparing it with five very well-known and reliable instruments, and in that comparison it came out second, and stood upon an exceedingly high plane which was of considerable importance, having regard to the very moderate price at which it was sold. He differed from Mr. Harrison in two points in relation to his reference to the fact that shadowless illumination was always depressing. First of all, he did not know of a sound system of illumination which could correctly be described as shadowless. There was nevertheless one system— with which certain people had thought fit to associate him— which was exceedingly pleasant, in that its shadows were of a very agreeable nature, but it was not by any means shadowless, and he thought they would all agree that a really definitely shadowless illumination would be very unhappy. This was a point which required very close co-operation between illuminating engineers and decorative artists. It was a phase which had not been sufficiently emphasised, and which was of very great importance, particularly in any system of indirect lighting. With regard to the suggestion that manufacturers of lamps should supply polar curves, and upon which both authors had adopted a somewhat pessimistic attitude, he said that there were certain firms, at all events, that had been in the habit for a very long time of furnishing, when called upon, most helpful information of this kind, but as far as his experience had gone they were very seldom called upon for it, and the fault lay just as much with illuminating engineers and architects as with the manufacturers. He was in entire agreement with Mr. Waldram in his remarks as to the desirability of indirect lighting, and in this connection he pointed out that after a very exhaustive research he had only been able to find two instances in which any specific installations of indirect lighting had been condemned as unsatisfactory. One of these was that recently referred to by Professor Morris, in which he had admitted that the indirect lamps were placed in unscientific reflectors, and that the position of the lamps relative to the ceiling was determined by head room rather than by scientific considerations. The other one was the reference made by Dr. Bishop Harman to the installation at Cambridge, which was put in a large number of years ago, and referred to an alternating-current system. Moreover, in this particular case the illumination was required for dissecting purposes, which was an exceedingly unusual and special feature.

Mr. J. G. CLARKE (Gas Light and Coke Co.) agreed with the suggestion that polar curves should be supplied by makers of lamps, and thought that the existence of these would make illuminating engineering a more simple matter. It must be remembered that lamps sometimes had certain architectural features which must not be overlooked, and for this reason it was much better to use shades of a transparent character, on the Holophane principle preferably, so that a certain amount of light went upwards and developed the architectural scheme; quite a small quantity of light was necessary to serve this purpose. A point in connection with the illumination of different rooms was that it seemed that with a given scheme of lighting and a given colour of walls the illumination of the walls ought to be inversely proportional to the square of the linear dimensions of the room. This would be rather an interesting thing to investigate.

Mr. W. R. RAWLINGS, while congratulating the authors upon their papers, thought they had overlooked one or two important points, such, for instance, as the comfort which was to be derived from the light itself, or from the luminosity. The suggestion seemed to permeate the papers that it would

be far better to have white walls. Again, it seemed to be suggested that all rooms were somewhat of the shape of the rooms referred to in which the tests upon different coloured wall papers had been carried out, but in actual practice it was found that rooms had alcoves, and that the walls were hung with pictures and curtains, and all these had to be taken into consideration when dealing with the illumination. They did not want to fix a volume of light throughout the room. Each room must be dealt with upon its merits. In a dining-room, for instance, the light was wanted on the table, and as much as Mr. Haydn Harrison knew of illumination—and they would all admit that it was very considerable—he ventured to suggest that he had still to learn something in regard to the requirements of the ladies in connection with illumination. Mr. Harrison had suggested that ladies wanted more light than the gentlemen, but he was sure that Mr. Harrison knew nothing about ladies if he adhered to that statement. When ladies went out in sunlight they usually put on a veil in order to leave something to the imagination, and when it came to artificial lighting the same idea seemed to permeate, because he was frequently told, when dealing with the boudoir and the drawing-room, "Please do not let me have a bright light." In the same way, in the smoking-room it was usually necessary to have a very bright light, and he differed from Mr. Harrison on these two points. Nevertheless, he congratulated the authors upon bringing forward a matter of very great interest indeed, and he was particularly interested in the way in which Mr. Waldram measured the luminosity in different parts of the room.

Mr. J. HEWITT said that both papers had dealt with the matter from the point of view of house-lighting pure and simple, and in this connection there was one thing that had to be considered very carefully, viz., the avoidance of eye-strain and the effect of sudden transit from darkness into a bright light, and also the avoidance of direct light into the eye. Of course, if the source of illumination was not to be visible there was then an entire avoidance of eye-strain. One difficulty which the ordinary illuminating engineer came across in practice was the trouble he often had with the architect who was employed on the job. As an instance, he mentioned a case in which he was concerned in which he had designed very carefully the whole scheme of illumination for a building in which there were a large number of oil paintings. He had previously seen the architect, who had given him particulars of the scheme of colouring, and everything else. But when he went down to the job afterwards he found that the blue was a great deal deeper than that given to him, the brown was nearly as dark as the hall of the Society of Arts, and there were heavy oak beams which had been shown white in the drawing. The result was that he had to alter everything. He asked Mr. Harrison to explain to him more clearly the exact definition of the sense in which the term "Diffusion" was used in his paper. The meaning he put upon it was that it related to the light coming from every possible point. Personally, he failed to see that they could get any approximation to this, and as no doubt the point had occurred to many others, perhaps Mr. Harrison would make it clear.

The CHAIRMAN asked any other gentlemen who desired to speak to send their remarks to the Secretary for inclusion in the Journal.

Mr. HAYDN T. HARRISON, replying briefly, said that Mr. Mackinney had misunderstood him, as he did not wish to suggest that the Lumeter did not read candle-feet perfectly accurately when used with the screen provided for the purpose. Mr. Mackinney had hit a pet theory of his (Mr. Harrison's) on the head. Mr. Mackinney always treated lumens as the measurement of light at a solid angle, and in this paper he (Mr. Harrison) particularly suggested that lumens should be the rays coming indirectly from the luminosity, and therefore would absolutely be the same as candle-power from the direct source and the luminous value from the indirect source, in which case the solid angle would be done away with. At present we in England had not got into the way of talking of this solid angle as was the case in America. In Great Britain, at any rate, most of us preferred to talk about light and square of distance to the solid angle, and Mr. Mackinney would find that very few people talked about lumens. Whether this was the right way to settle the point or not must be for some future occasion.

Mr. WALDRAM also replied briefly. With regard to Mr. Trotter's suggestion that experiments should be carried out with model rooms, he said these were rather difficult and not at all easy. It was particularly necessary to find out whether experiments in a room 10 feet square were comparable with a room 100 feet square, and he was inclined to think they would be. He had recently found that results obtained in a

room 20 feet by 10 feet were almost the same proportionately as in a room 135 feet by 60 feet by 30 feet high. Thus it would seem that it did not seriously matter what size the room was in which the experiments were carried out. He disagreed with Mr. Clarke as to the fixed illumination of a room varying according to the square of the linear dimensions. He would have thought that in a white room they would vary according to the linear dimensions and not according to the square. Mr. Eck had been rather sorry that he had not criticised gas experts in his paper, or rather that he had left them out. He was afraid the difficulty was, speaking as an architect, that he found neither gas nor electrical experts could generally guarantee to provide a wiring installation which would give a certain feet-candle illumination in a given room. That was the difficulty he had found as an architect, and he must say that the only people he had been able to get anything from was the Holophane Co. There might be others, but it was his experience that if he wanted to get a certain amount of illumination, say on a rinking floor or a dancing floor, or, indeed, on any floor, he could get information concerning it from the Holophane Co. or their engineers. When it came to walls or ceilings it was not so easy. Mr. Mackinney took the table plane, but he hoped that they would not neglect the walls and ceilings. Mr. Rawlings seemed to be rather afraid that he was suggesting white walls. As a matter of fact, white walls and also white ceilings were largely used in America for economy, and their economy was obvious. There was need for standards of brightness for different coloured papers, and he hoped some action would be taken in regard to this. With regard to Mr. Rawlings's suggestion that a very good light was wanted in a smoking-room, he suggested that in an ordinary West End club-room it was more useful to have particularly dark colours and walls, and particularly bright lights on the tables. He hardly thought that a high general illumination on the walls of a card-room, for instance, would be satisfactory.

Mr. Waldram concluded by making a few criticisms upon Mr. Harrison's paper. An important point was the possibility of obtaining candle-power curves of lamps and shades together, because if the reflectors interfered with the laws of inverse squares, then the whole subject was insoluble, but he ventured to suggest that it was not so. He believed that it was possible to get a proper polar curve of lamp and reflector. If this were not so, then a polar curve of a lamp and shade measured at a certain distance would materially differ from a polar curve measured at another distance. If this occurred, then a very large element of doubt was introduced into all their results, but he did not think that was the case.

The CHAIRMAN, in proposing a vote of thanks to the authors of the papers, said that contributions of this description justified the existence of the Society. Mr. Harrison's paper brought out a figure which was quite satisfactory to him personally, namely, that the light green gave such good reflective results, a fact which he had suggested in connection with the last meeting of the Society. If anybody had any doubts as to the reflective value of various colours he did not think there was a better object-lesson than by going into Oxford Street and seeing certain buildings where there were a large number of windows all lighted in exactly the same way, and if they analysed the windows which had dark materials in them the lighting appeared to be most inferior as compared with the windows which had lighter materials. Mr. Waldram's paper might very well have a sort of text which would read something like this, "Dull walls, dull spirits," and he thought it was a valuable suggestion of Mr. Waldram's that the Council should try and draw up standards of brightness of illumination for different classes of interior work. Although the Council was very much overworked, he had no doubt that next session they would be able to give this suggestion consideration.

MR. A. G. CLIFFORD, architect, Glasgow, has been appointed by Dunfermline Parish Council adjudicator on the competitive plans for new offices for the Council, which are to be built in Abbot Street.

THE Council of Manchester University through a gift made by two friends has been enabled to offer a travelling scholarship in architecture under which a student who has taken first-class honours in architecture may travel for a time to study the subject abroad. The first award will be made in 1912.

MR. WILLIAM KELLY, A.R.S.A., has prepared a model of his design for an hexagonal tower to be erected at Inveramsay, about twenty miles from Aberdeen, on the site of the battle of Harlaw, the quincentenary of which is to be celebrated next month.

ARBITRATORS AND THEIR AWARDS.*

ON former occasions I have delivered lectures on the question of "Arbitration Procedure" and "Arbitrations" in general, and I have been requested to-day to deal with "Arbitrators and their Awards," which I have very much pleasure in doing briefly, as the time allowed for these lectures makes it practically impossible to go into the subjects at all in detail. I shall therefore speak to you shortly about arbitrators and then consider a few points which must be borne in mind when preparing an award.

1. *Who may be an arbitrator?* That is a question very easily answered, because as a general statement it is correct to say that anyone can be an arbitrator so long as he is approved by both parties to the arbitration. The persons concerned can nominate and agree to anyone, and if the person appointed turns out to be unfit, incapable, or unsuitable, the parties have only themselves to blame, and have no remedy by action for negligence or incapacity. The parties secure their own judge and select a person who they consider will be able to settle their differences and see justice done between them, and possibly consider will be able to do so at less expense than actual litigation in the Law Courts. But although anyone may be agreed upon as an arbitrator, yet the person appointing an arbitrator should do so with considerable caution, having regard to the qualifications of the person appointed.

The position of the arbitrators may be considered somewhat different under different circumstances. When the dispute is referred to two arbitrators and an umpire the arbitrators may well be considered as agents acting for their respective principals, endeavouring to try and settle the case without going into Court, but the umpire or single arbitrator occupies a judicial position, and is bound as far as practicable to follow legal rules.

You have therefore to consider who and what you are appointing, always remembering that your appointment is final and that once having chosen your tribunal, you must stand by your bargain.

When you choose your arbitrator to act with another and an umpire you will choose him possibly for his experience and skill in the particular matter in dispute, and have regard to his power of persuasion in arriving at a fair and equitable decision, certainly with a capacity to join in choosing a proper umpire. On that branch of the question we need not dwell.

It is when you choose or join in choosing a sole arbitrator and are selecting your judge and jury that you should see that he is a fit and proper person.

It may be that you have left the question of the nomination of an arbitrator to some body or person, some council or committee, or possibly the president of some institute such as your own. In such case you have placed it out of your power to do otherwise than acquiesce in the appointment, and unless an appointment is manifestly improper, which is not likely to be the case, you have no voice in the appointment, although I see no possible objection to your explaining to the person making the nomination, when you ask him to nominate, the kind of dispute which is to come before the arbitrator for decision and the kind of arbitrator you would prefer should be appointed.

But the person making such a nomination has an onerous duty to perform, and should be careful that he nominates a capable and efficient arbitrator, and one who will be able to deal properly with the dispute or question which will be submitted to him for decision.

In my opinion, an arbitrator should be a person who has had experience at the work, for not only will he have to be able to bring skill and common sense to bear upon the subject matter of the dispute, but he will also have to be able to conduct the inquiry in a legal and judicial manner, and should have a detailed knowledge of arbitration procedure and the way to prepare an award, otherwise, in all probability, his award will be upset by the dissatisfied party and the whole arbitration will be of no useful effect. You should avoid, as far as possible, a man who will be led away by his own prejudices or peculiar crotchets; he should be one who has a good knowledge of the work and is able to appreciate the evidence of witnesses, able to easily discover fallacies and weigh all the surrounding circumstances; he must, in fact, act as judge and jury.

As to his appointment, there are few instances given in the reports of cases impeaching awards on the ground of the

incompetency of arbitrators, and very little light is thrown on this subject, for usually the parties are fairly successful in appointing someone capable, and the incapacity is not as a rule found out until the award is published.

The Arbitration Act provides that when the submission is in writing, "if no other reference is provided the reference shall be to a single arbitrator."

The sole arbitrator is either

(a) Nominated in the submission.

(b) Nominated by a person named in the submission either as an individual or as the holder of a particular office for the time being, such as a person nominated by the President for the time being of the Auctioneers' Institute.

(c) Agreed upon by the parties, or

(d) Appointed by the Court.

In case of a submission to arbitration it is not unusual to provide that the two arbitrators named in the submission should appoint another arbitrator by whom, or by any two of them, the matters in dispute are to be determined; the appointment of such third arbitrator should be made before the arbitrators originally appointed do any other act. Such third person is not an umpire, but a third arbitrator, and the three must act together; in fact, until the third arbitrator has been appointed the two have no power to proceed with the arbitration in any way.

The most common form, however, of a submission to arbitration when the Act does not apply is to refer the dispute to two persons, and to provide that the arbitrators shall appoint an umpire who, if the two arbitrators do not agree in making their award, shall alone settle the matters in dispute; this third person is called the umpire. Sometimes the umpire is named in the submission, but more frequently than not the appointment of the umpire is left to the arbitrators. This power of appointing a third arbitrator or an umpire, when delegated to the two arbitrators appointed by the parties, is a matter of judgment and not of chance, and must be exercised accordingly; the appointment must be a matter of choice. Thus, where the arbitrators, not being able to agree as to the person to be appointed, cast lots as to which of the two arbitrators should nominate the umpire, the Court considered that method of procedure to be improper, and set aside the award made by such umpire.

If, however, the parties themselves agree to, or acquiesce in, the procedure of appointing an umpire or third arbitrator by lot, the appointment would undoubtedly hold good. In an old case where on a reference to two arbitrators and, in case of their not agreeing, to an umpire to be appointed by them, each arbitrator furnished the names of three persons which were not objected to by the other, and in the presence of the parties, who attended before them for the very purpose, the choice of umpire was determined by lot from such six names, and a memorandum of the appointment of the person so selected was indorsed on the agreement of reference in the presence of and with the concurrence of both parties, the Court refused to set aside the award made by such umpire, the parties themselves having directed the mode of choice, and if the parties, with knowledge that the arbitrators had appointed an umpire or a third arbitrator by lot, attend at the meetings before such umpire, such attendance would be considered a waiver of any objection; but, on the contrary, if the parties attended before an umpire so appointed without knowledge of the method of appointment they would not be prevented from taking objection to the award if they afterwards discovered the irregularity. In order to render the attendance of the parties before the umpire a waiver of this irregular mode of appointment it would have to be proved that the parties were cognisant of all the circumstances under which the appointment was made, so that where two arbitrators each nominated a person to be umpire, and each objected to the other's nomination, and they elected between themselves, without the knowledge of the parties, one of such two by lot, and the party against whom the award was made had attended before the umpire with knowledge that the umpire has been chosen by lot, but not knowing that that person had been objected to by one of the arbitrators, it was held that such attendance would not be considered a waiver, and the Court could under such circumstances set aside an award made by an umpire so nominated.

Where the nomination and appointment of the umpire is left to the arbitrators, the appointment must follow the submission; it must be either under the hands and seals, or under the hands only of the arbitrator, as required by the submission. The appointment of an umpire by the arbitrators does not require a stamp.

Arbitrators named in the submission with power to appoint a third arbitrator or an umpire should make the appointment before they do any other act. For, as Lord

* A lecture delivered by Mr. George Phillips, J.P., of the Inner Temple, barrister-at-law, at the annual meeting of the Western Counties branch of the Auctioneers' Institute of the United Kingdom, at the Rougemont Hotel, Exeter, on Monday, May 8.

Ellenborough said, "It is very convenient for arbitrators to begin by appointing an umpire, because they are more likely to agree upon a proper choice of one before they themselves begin to quarrel."

If the arbitrators nominate an umpire who accepts the office and enters upon the reference, their power as to the appointment of an umpire is at an end, and if, after such acceptance, the parties object to the umpire who relinquishes the appointment, the arbitrators have no power of appointing another, for an authority when once executed cannot be executed again. If, however, the person so nominated does not accept the appointment the arbitrators may elect another until they get a person to enter on the umpirage.

Where the reference is to two arbitrators, and in case of disagreement to an umpire, the arbitrators cannot award as to part of the dispute and the umpire as to the residue, but the award must be made of all matters by the arbitrators or the umpirage of all matters by the umpire. Therefore, where all matters in difference were referred to two arbitrators, or in case they disagreed to an umpire to be chosen by them, by the award and umpirage it appeared that the arbitrators determined several matters, and they differing in one matter, such one matter was referred to the umpire, who determined that matter alone, the Court held that such an award was void, as it was neither an award of the arbitrators nor the umpirage of the umpire. If the arbitrators make an award, although it is bad, as not comprehending all matters in difference or the like, the umpire has no power to deal with the subject omitted. But the mere act of the arbitrators, whose authority has determined, joining with the umpire in making the umpirage does not vitiate such umpirage, for the award is, in law, the award of the umpire alone; it is no more than if mere strangers had joined in the award, which could not vitiate it. If the arbitrators hear all the evidence and afterwards disagree and state the evidence to the umpire, on which he makes his award without re-examining the witnesses, it is good, unless he is required by the parties to examine them before he makes his award. But where the umpire is required to re-hear the evidence of witnesses examined before the arbitrators he is bound to do so, and if he refuses the Court will set aside his award. The usual course adopted is for the arbitrators and umpire to all sit together and hear the evidence, and such a method is convenient, but of course the umpire is not the ruling spirit, and, in fact, has no *locus standi* unless the arbitrators have notified that they have disagreed, and when they have so notified, of course their powers are at an end and the umpire becomes the sole judge. Other methods are often adopted, but are strictly quite out of order.

(To be continued.)

THE CONCRETE INSTITUTE.

INTERIM REPORT OF THE TESTS STANDING COMMITTEE ON THE TESTING OF CONCRETE, REINFORCED CONCRETE, AND MATERIALS EMPLOYED THEREIN.

THE Tests Standing Committee of the Concrete Institute held their first meeting on January 26, 1911, and have held five subsequent meetings.

2. The Committee decided to take up for immediate investigation standard methods of testing concrete, reinforced concrete, and materials employed therein.

3. This interim report deals only with the testing of the materials and specimen pieces of concrete.

4. For the purpose of this report the materials employed in concrete and reinforced concrete will be classified under the following headings:—

(a) Coarse material. (b) Sand. (c) Cement. (d) Water. (e) Steel.

5. This report does not take into consideration, so far as applied to reinforced concrete, any coarse material which does not pass an aperture of $\frac{3}{8}$ in. by $\frac{3}{8}$ in., and which is not retained on an aperture of $\frac{1}{4}$ in. by $\frac{1}{4}$ in. The material used for coarse material generally can be classified under the following headings:—

(a) Pit gravel. (b) Pit gravel crushed. (c) River gravel. (d) River gravel crushed. (e) Sea gravel. (f) Sea gravel crushed. (g) Crushed rock. (h) Crushed brick. (i) Crushed slag. (j) Clinker and coke breeze.

Classes (i) and (j) are not recommended as suitable material for reinforced concrete.

6. This Committee is of opinion that to obtain the best results in concrete, the coarse material and sand should be properly graded.

Unfortunately the principle of grading coarse material and sand is very little resorted to, and consequently there are few data on this important subject.

This is now being considered in detail by the Committee, and a further report will be issued in due course.

7. The result of a series of tests shows that the percentage of voids in materials varies according to the different sizes and grading from 35 per cent. to 48 per cent. It should be noted that, owing to the different materials tested, the variation is very irregular.

8. This report does not take into consideration, so far as applied to reinforced concrete, any sand which does not pass an aperture of $\frac{1}{4}$ in. by $\frac{1}{4}$ in., and which is not retained on an aperture of $\frac{1}{80}$ in. by $\frac{1}{80}$ in.

Sand used in concrete work is as follows:—

(a) Pit sand (other than that of glacial origin). (b) River sand. (c) Sea sand. (d) Grit or sand from crushed coarse material.

9. It is important that all sand that is not retained on an aperture of $\frac{1}{80}$ in. by $\frac{1}{80}$ in. should be rejected. The following results of tests have been submitted to this Committee as showing the deleterious effect of allowing dust to remain in the sand:—

PROPORTION. THREE TO ONE (BY WEIGHT).

Crushing Tests.

British Standard Sand and Cement.	Crushings from Porphyritic Granite and Blue-grey Whinstone to pass 30 by 30 Sieve, including all Dust.
Per Square Inch. 28 Days.	Per Square Inch. 28 Days.
2,789 lbs.	606 lbs.

Tensile Tests.

7 Days.	28 Days.	7 Days.	28 Days.
182.2 lbs.	234.6 lbs.	53.2 lbs.	104 lbs.

10. The percentage of voids in sand varies from 23 per cent. to 40 per cent.

11. According to the various proportions of graded coarse material and sand, the percentage of voids varies from 24 per cent. to 30 per cent.

12. All cement should be tested and analysed in accordance with the Engineering Standard Committee's latest specification. The Tests Standing Committee of the Concrete Institute strongly recommends that in addition the crushing strength of the cement should be ascertained in the following manner:—

13. Cubes mixed in the proportion of 3 parts of standard sand to 1 part of cement, by weight, shall be made up and treated in all respects similar to briquettes of sand and cement for the tensile test, but the test specimens for crushing to be 3-in. cubes. The crushing strength shall be not less than ten times the tensile strength at 28 days required by the British Standard Specification.

14. This Committee is of opinion that it is not advisable to define the proportion of water to be used in making up concrete or test specimens of cement and concrete, as this quantity must be more or less dependent on the variations in the weather and the nature of the coarse material and sand used in each particular case; but it is generally considered that the concrete should be mixed to a plastic state, though not so wet as to allow any dripping of the cement, water, and sand.

15. The following tests are recommended for all steel work for use in reinforced concrete.

16. The steel shall attain an ultimate tensile strength of not less than 60,000 lb. per sq. in.

17. The steel shall withstand a stress of at least 34,000 lb. per sq. in. before showing any appreciable permanent set.

18. The contraction of area at fracture shall be not less than 45 per cent.

18a. (Or) The elongation in the case of bars of 1-in. diameter and under shall be not less than 25 per cent. measured on a length equal to eight times the diameter of the bar tested.

The elongation shall be measured in the case of bars over 1-in. diameter on a length equal to four diameters of the bar, and shall be not less than 30 per cent.

19. All steel shall stand bending cold to an angle of 180° around a diameter equal to that of the piece tested, without fracturing the skin of the bent portion.

20. The steel shall be free from scabs and flaws.

21. For the purpose of ascertaining the crushing resistance of concrete the following particulars shall be complied with:

(a) All test pieces shall be 4-in. or 6-in. cube.

(b) Number of test specimens for each test shall be six.

(c) Three cubes shall be made in the laboratory and three for each test shall be made on the works.

(d) The cement for each series of cubes shall be taken from the same consignment.

(e) All laboratory-made test cubes shall be made as far as possible on practical lines, so that the results of the tests

shall be such as can be reasonably expected from concrete in the actual work with proper care and attention.

(f) Specimen cubes from the works shall be made with concrete taken from the actual mixing platform; the concrete used for the specimen cubes shall be taken from the various batches of concrete prepared for use in the works.

(g) In all cases specimen pieces shall be made in metal moulds, and the concrete worked in by "punning" and "tamping" and afterwards gently rammed.

22. The following particulars shall be taken or ascertained of the materials used in the test specimens of the concrete:—

(a) Full test on cement as specified in Clauses 12 and 13.

(b) The coarse material and sand for the laboratory tests, which is to be taken from bulk as delivered to the works, shall be sieved to the following degrees and the voids ascertained of (1) the whole and (2) of each separate grading:—

Coarse Material.

To pass an aperture of— To be retained on an aperture of—

$\frac{3}{4}$ in. by $\frac{3}{4}$ in.	$\frac{5}{8}$ in. by $\frac{5}{8}$ in.
$\frac{5}{8}$ in. by $\frac{5}{8}$ in.	$\frac{3}{4}$ in. by $\frac{3}{4}$ in.
$\frac{1}{2}$ in. by $\frac{1}{2}$ in.	$\frac{5}{8}$ in. by $\frac{5}{8}$ in.
$\frac{3}{8}$ in. by $\frac{3}{8}$ in.	$\frac{1}{2}$ in. by $\frac{1}{2}$ in.

Sand.

To pass an aperture of— To be retained on an aperture of—

$\frac{1}{4}$ in. by $\frac{1}{4}$ in.	$\frac{1}{8}$ in. by $\frac{1}{8}$ in.
$\frac{1}{8}$ in. by $\frac{1}{8}$ in.	$\frac{1}{16}$ in. by $\frac{1}{16}$ in.
$\frac{1}{16}$ in. by $\frac{1}{16}$ in.	$\frac{1}{32}$ in. by $\frac{1}{32}$ in.
$\frac{1}{32}$ in. by $\frac{1}{32}$ in.	$\frac{1}{50}$ in. by $\frac{1}{50}$ in.

(c) The proportion of each grading to the whole.

(e) The specific gravity of the coarse material and sand.

(b) The exact dimensions of specimen cubes.

(c) The weight per cubic foot of all specimens immediately before testing.

(f) The testing of concrete specimens shall be conducted on three laboratory specimens, and three specimens made on the work (see Clause 21), and shall be tested at the following periods:—

<i>Minimum Tests</i>	7 days
(Recommended	28 "
as the least	56 "
that should	90 "
be under-	6 months
taken).	12 "

<i>Medium Tests</i>	7 days
(Recommended	28 "
to be under-	56 "
taken where-	90 "
ever possible).	9 months
	1 year
	2 years

<i>Maximum Tests</i>	7 days
(Recommended	28 "
for extensive	56 "
structures	90 "
and research).	6 months
	9 "
	1 year
	2 years
	3 "
	4 "
	5 "

All specimens shall be kept in air after mixing and slightly damped for the first seven days.

All cubes made up on the works shall be forwarded to the laboratory on the fifth day.

After the expiration of 7 days specimens shall be kept under cover for the purpose only of protection from the direct action of rain and direct sunrays.

23. The Committee is of opinion that for the purpose of providing for the cost of testing a provisional sum should be included in all contracts where such testing will be required, this being the most satisfactory and fairest way to all parties concerned.

24.—Members of the Institute are invited to forward the Committee particulars of any tests which they may have available.

MR. T. G. JACKSON, R.A., Honorary Fellow of Wadham College, is to receive the honorary degree of D.C.L. of Oxford at the Encenia on June 28.

OUR CONTEMPORARIES FROM OVERSEAS.

THE *American Architect* (New York) illustrates recent work of Messrs. James Purdon, Bohard & Parsson, and of Messrs. Alden & Harlow in domestic architecture. Some of Messrs. Allen & Collens' working drawings for the Ohio State University Library are also reproduced. The number also contains an interesting illustrated article on Saragossa, the city of brick.

Arkitektur og Dekorativ Kunst (Christiania) is principally filled with a description and illustrations of premiated designs for working men's cottages in two classes, farm labourers and fishermen.

La Construction Moderne (Paris) illustrates the new post office at Tarbes by Mons. Daniel Beylard, and the Jardin Roselle at Alexandria, Egypt, of which Mons. Paraskevas is the architect.

Het Huis (Amsterdam) commences an illustrated article on the ruined castle of Doornenburg, in which are included views from old engravings showing its appearance in the eighteenth century, before ruination. There is also an article on tobacco box lids engraved with scriptural and other subjects.

Engineering Record (New York) contains an account of the pneumatic caisson foundations of the Emigrant Bank Building, New York, a seventeen-storey erection with frontages to Chambers Street and Reade Street. The foundations are carried down through earth, water, and quicksand to a gravel bed 60 or 70 feet below the street level.

Berliner Architekturwelt (Berlin) is this month a monograph of the work of Herr Bruno Möhring, examples of which are given of many varieties, including the wine cellars of Julius Kayser & Co. at Traben on the Moselle, the German pavilion at the recent International Railway and Traffic Exhibition at Buenos Ayres.

Construction (Toronto) is quite ecclesiastical this month with an article on Church architecture by Mr. Eden Smith, and one on the Cistercian abbeys of South-west Scotland by Mr. Sydney H. Miller, both illustrated. Secular work described includes premises at Winnipeg for the Bank of Nova Scotia and a house in Toronto "in Tudor design."



[The Editor will not be responsible for the opinions expressed by Correspondents.]

The Passing of the Jerry Builder.

SIR,—Reading the leading article in your issue of June 2, I have been much impressed with the writer's remarks contained therein. I quite agree with you that the Romford Garden Suburb Exhibition marks the parting of the ways, but I hardly think your remarks on the man known as the jerry builder are quite just. Twenty to twenty-five years ago, I ask you, Sir, where you could have found architects willing to design a house of the total value of 375*l.*, or even 500*l.*? Men of the position of those who have entered for this competition would then have laughed at the idea, consequently Mr. Jerry Builder provided a want, and I make bold to state by his very shortcomings has materially helped to educate these very gentlemen, who in conjunction with up-to-date builders are showing us such an object lesson as can be seen at Romford. Although I believe that the heading of this letter is a true and trite remark, let us be just to the memory of the man who first gave us a cheap house and who, with all his many failings, has done much to bring about this awakening in the architectural profession. Apologising for taking up so much of your space, I am, &c.,

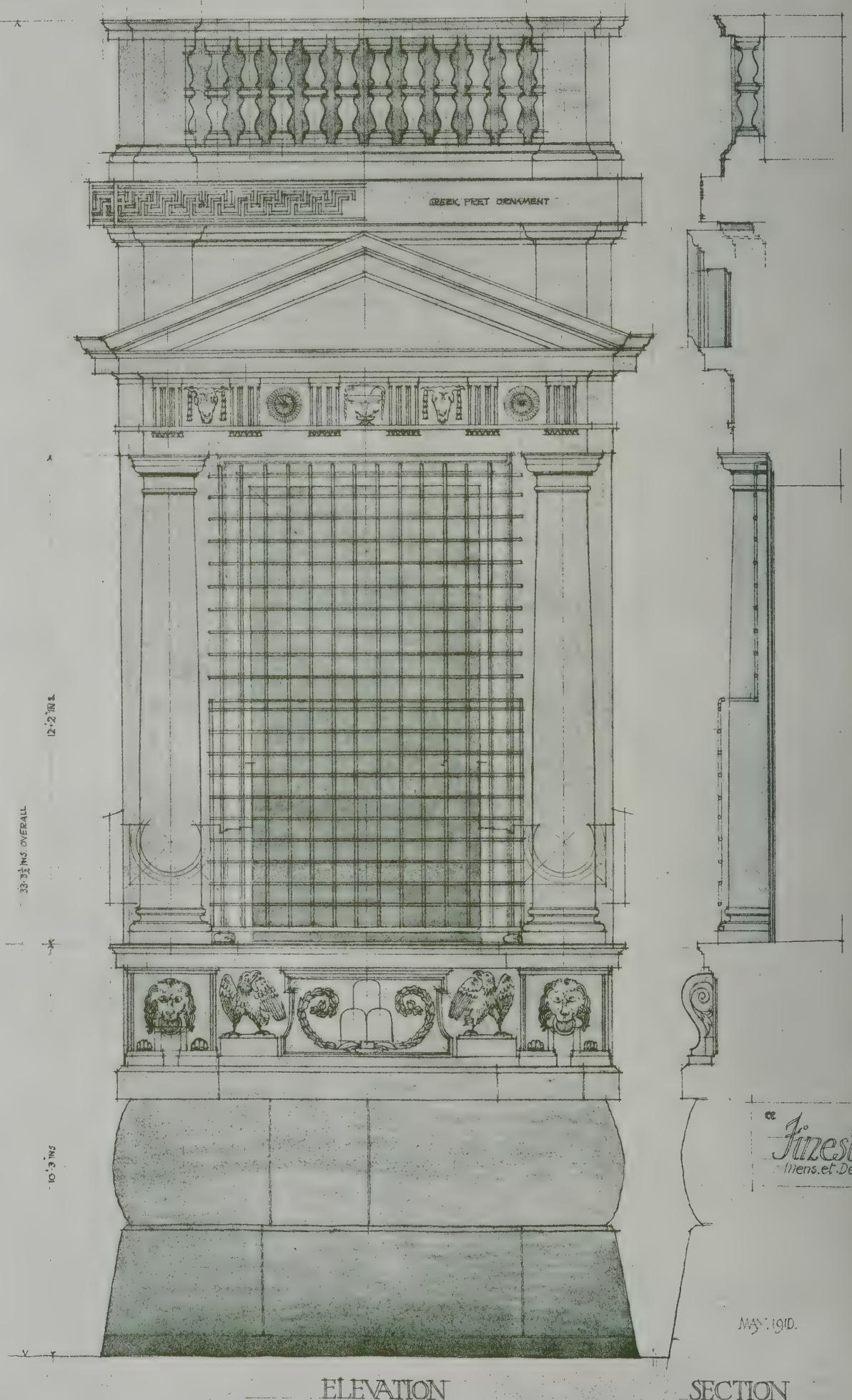
A DWELLER FOR 25 YEARS IN JERRY-BUILT HOUSES.

MR. P. G. FRY, architect, Weston-super-Mare, is the architect for the church of St. Paul, about to be erected at a cost of 10,700*l.* in the parish of Emmanuel, Weston-super-Mare.

THE Winchester City Corporation have accepted from Mr. C. B. Phillips, formerly Master of Winchester College, more than a hundred drawings of the city, and a hope was expressed that with this encouragement the Corporation would consider the provision of an art gallery for the city.

WINDOW from PALAZZO COMUNALE. BOLOGNA

Serio. Architect. Materials: brick, plaster & stone.



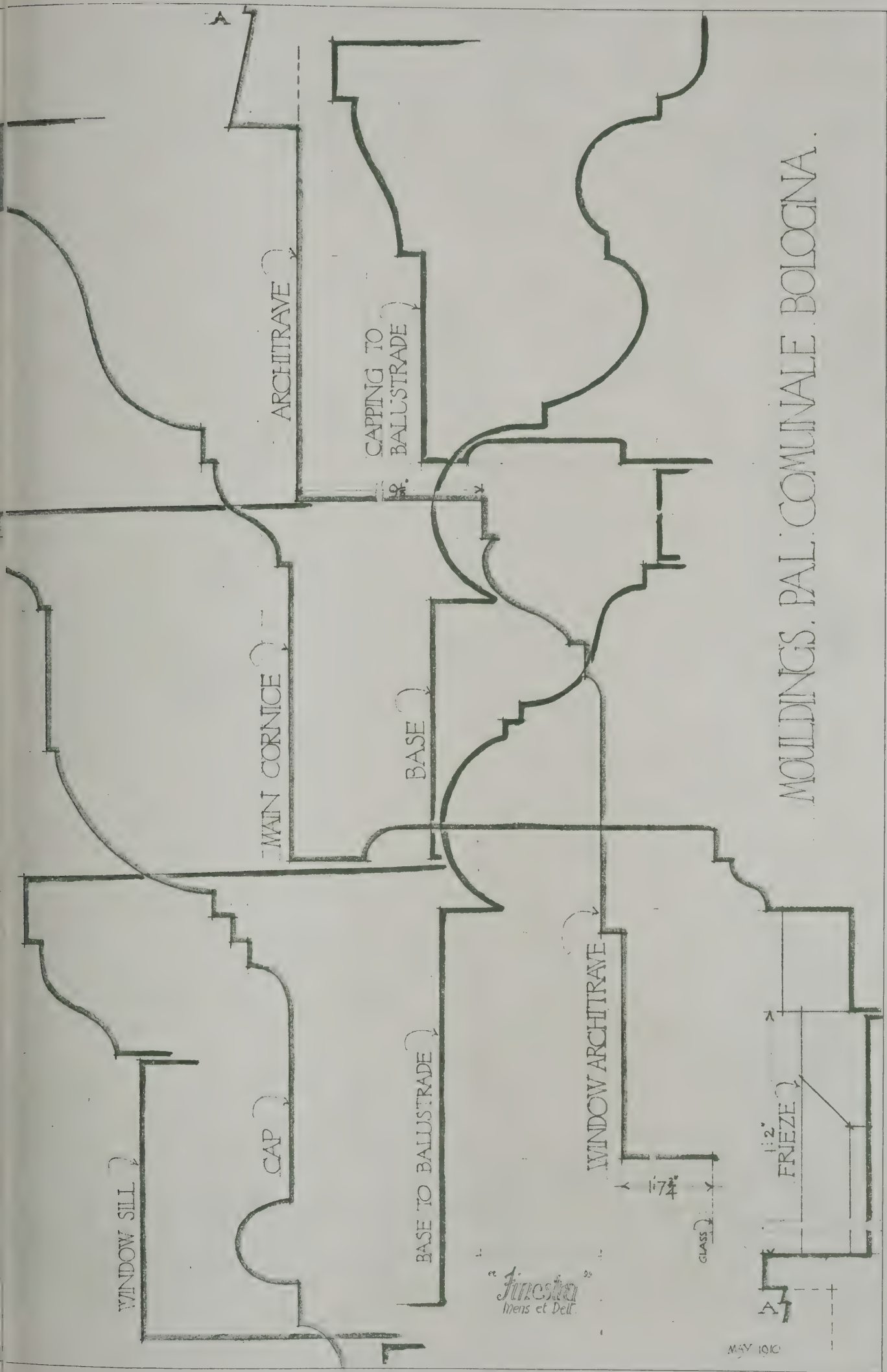
ELEVATION

SECTION

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PRIZE DRAWING BY "FINESTRA."

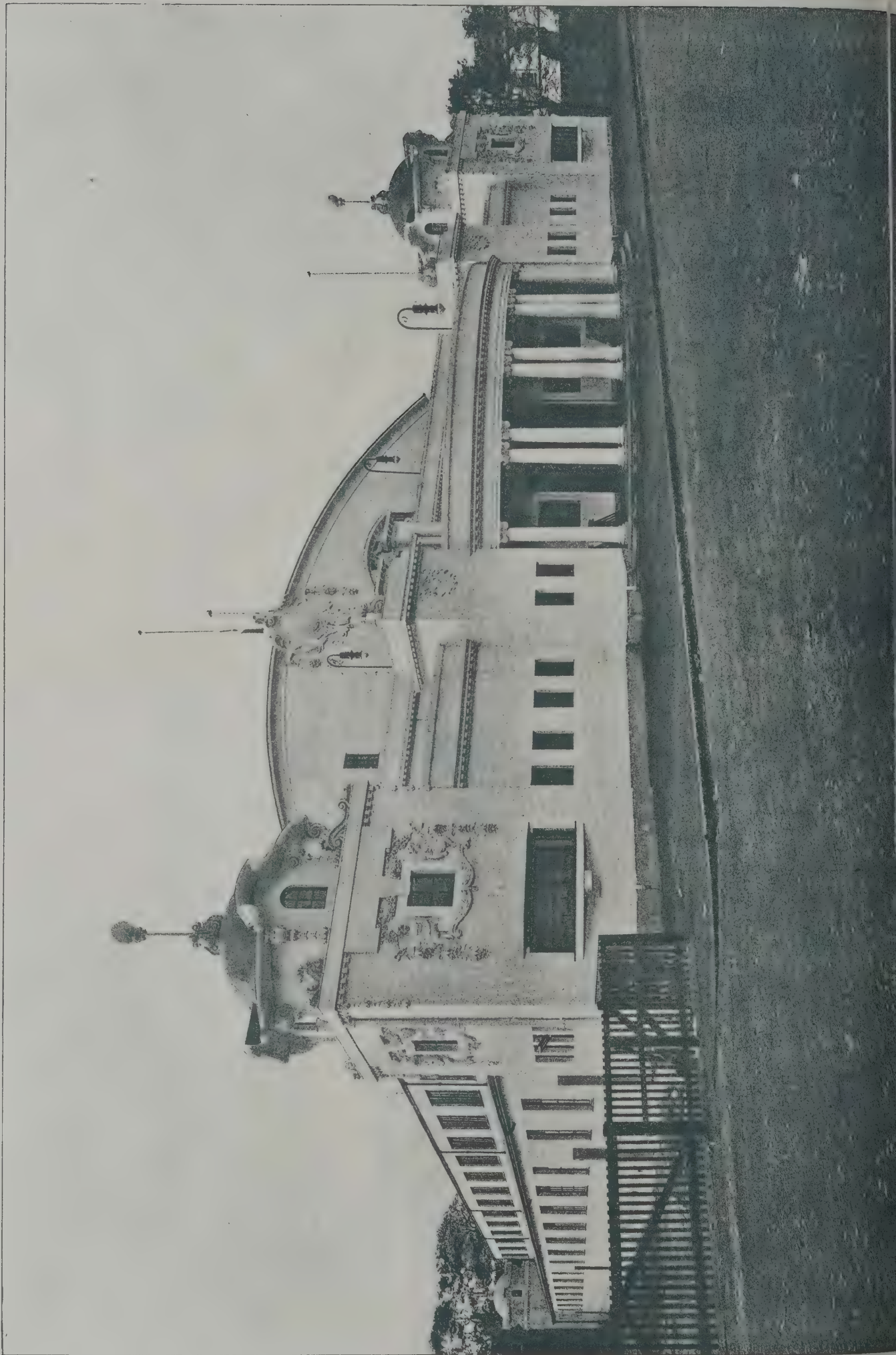
"THE ARCHITECT" STUDENTS' SKETCHING & MEASURING CLUB.



MOULDINGS. PAL. COMUNALE BOLOGNA.

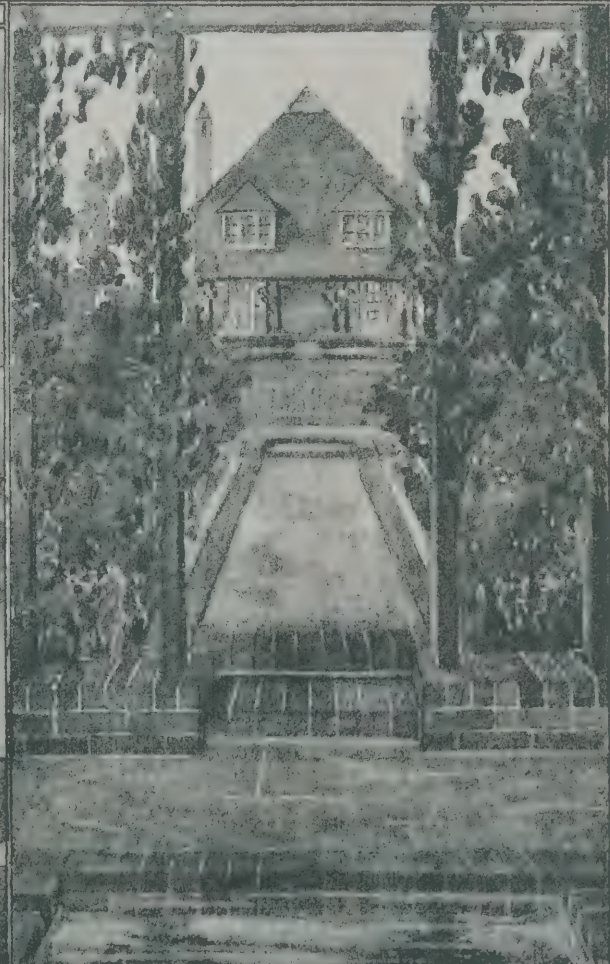
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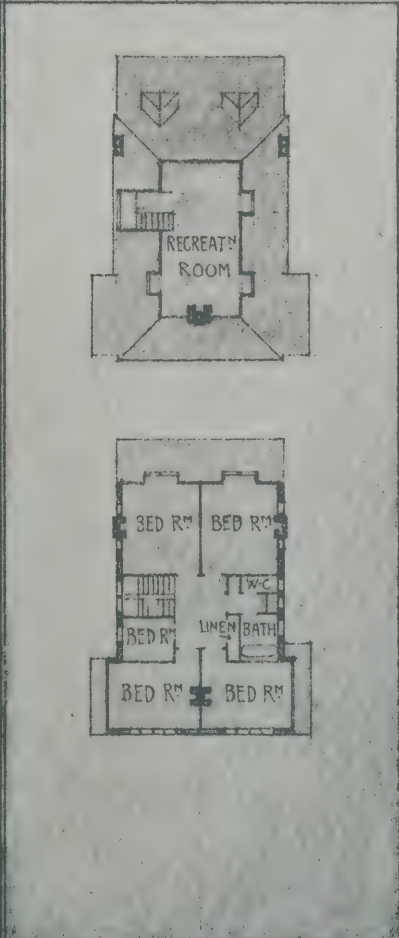




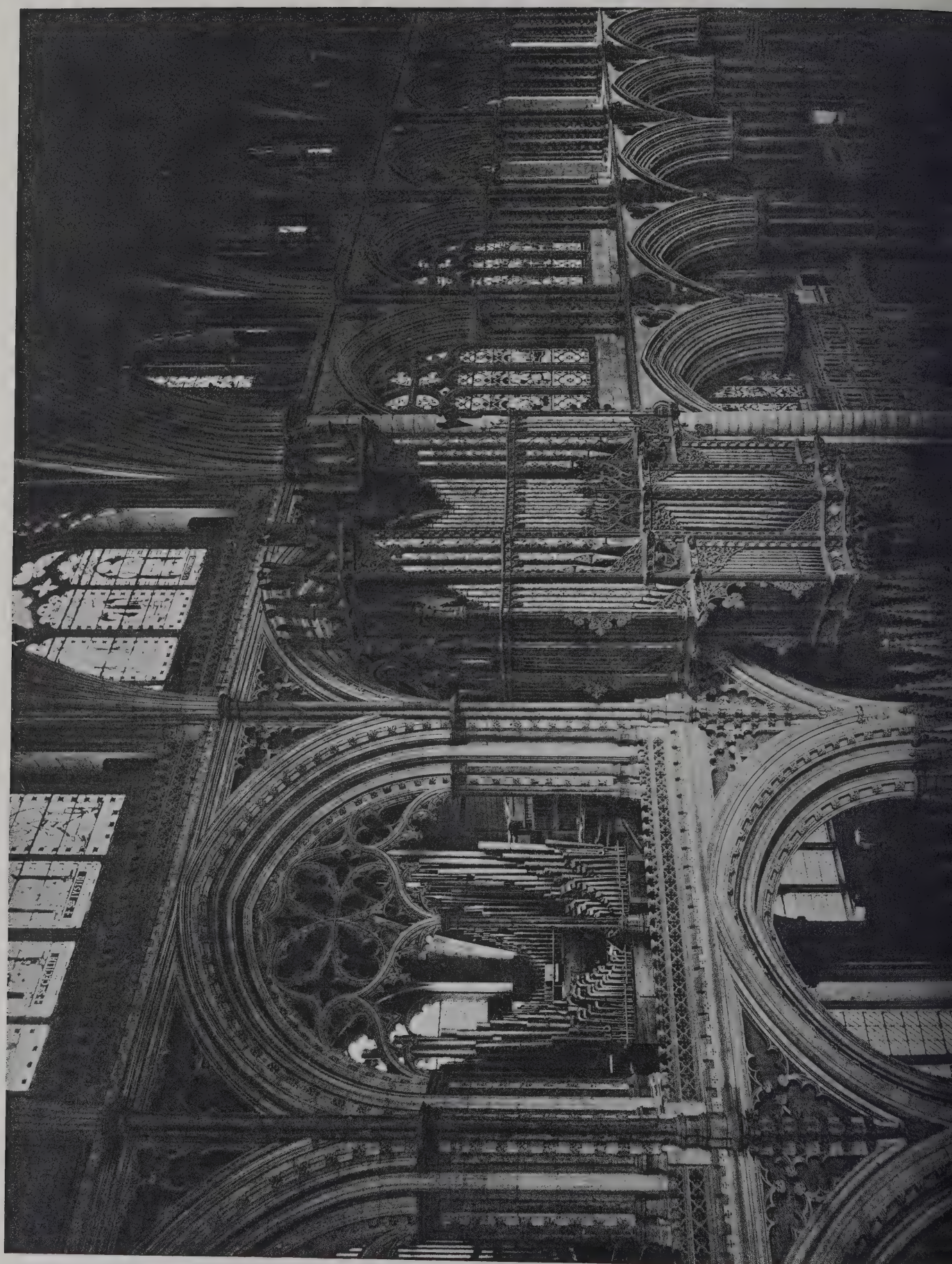
W. FROM NORTH-WEST
HOUSE AT PRINCES RISBOROUGH • BVCKS • FOR • J. WITNEY ES.
- GROUND PLAN -



C.W. PIKE ARCHT 28 THEOBALDS RD W.C.
- ATTIC PLAN -



VIEW OF BACK FROM SUNK COURT FIRST FLOOR PLAN



The Architect, June 9th 1911.



"INK-PHOTO" SPRAGUE & CO. LTD. 4 & 5, EASTHARDING STREET, FETTER LANE, E.C.

CATHEDRAL SERIES. No. 673.—ELY: SOUTH CHOIR AISLE, LOOKING EASTWARDS.

The Architect.

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FORTHCOMING EVENTS.

- Friday, June 16.
- Architectural Association: Exhibition of Students' Competitive Drawings at 18 Tufton Street. Closes June 26.
- Saturday, June 17.
- Northern Architectural Association: Students' Sketching Club Meeting.
- Manchester Society of Architects: Visit to Adlington Hall, Cheshire.
- Thursday, June 22.
- Coronation of King George V.
- Monday, June 26.
- Royal Institute of British Architects: Presentation of the Royal Gold Medal, at 8.30. "The Interleaved Heirloom Copy of the *Parentalia*, and some Notes on the Wrens," by Lawrence Weaver, F.S.A., Hon. A. Exhibition of Photographs of Wren's work.



INTERIOR FROM HOUSE AT GIDEA PARK.—Mr. M. H. BAILLIE SCOTT, Architect.

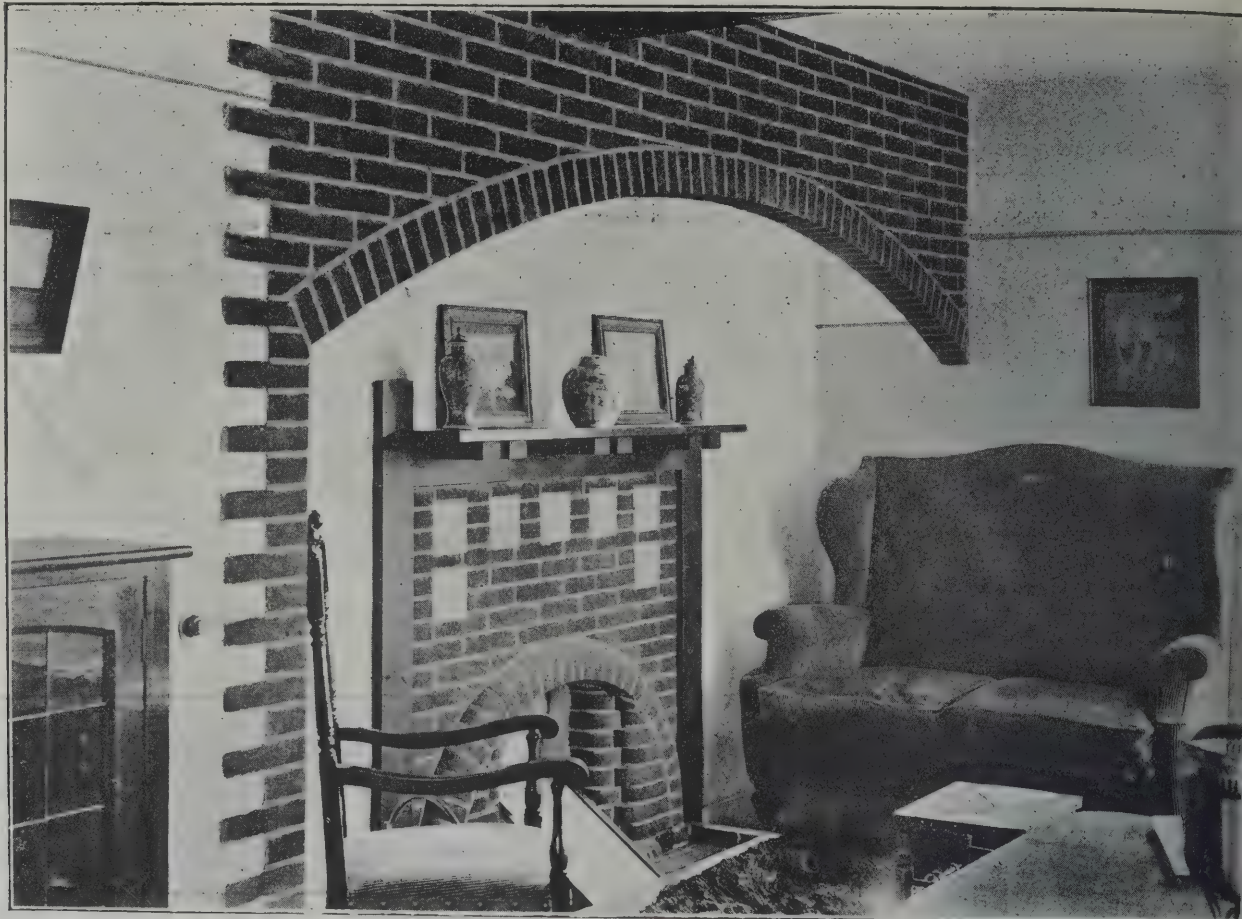
INTERIORS AT GIDEA PARK.

IN the designing of such small houses as those erected in accordance with the conditions of competition prescribed at Gidea Park, limited in building cost to £1,000 in Class I. and 375*l.* in Class II., it can hardly be expected that much opportunity occurs for striking interior effects, and it is therefore satisfactory to note that notwithstanding the limited opportunity there are not a few examples of pleasantly successful interiors to be seen in the newest garden suburb.

Where the architect has elected to follow the traditional arrangement of the middle-class house with its living-room and drawing-room as separate and distinct departments there is naturally small chance of creating a vista or framed view, and the designers of this type

of plan have necessarily found themselves restricted to, at the most, some exhibition of thought in the treatment of their staircase or of the fireplace in one or more rooms. Where, on the other hand, the more up-to-date division of the living-room accommodation into one large and one small apartment has been adopted, or where the rooms have been arranged en suite with wide openings, either permanent or capable of being closed on occasion, then interior views of a very considerable amount of pleasurable interest have been rendered possible.

Thus in the gold-medal design of Class I., by Mr. GEOFFREY LUCAS, we find a great lack of interior effect other than that of the well-designed detail of the individual small sitting-rooms, whilst in Mr. BAILLIE SCOTT'S house in the same Class I. we have a remarkable variety



INTERIOR FROM HOUSE AT GIDEA PARK.—Messrs. FAIR & MYER, Architects.

of pleasant interior effects produced by the grouping of three rooms en suite with wide openings between them. We give an illustration of one of the interior views in this house, showing the fireplace in the largest living room. Mr. SCOTT has abolished the work of the plasterer by leaving the walls pointed with a flush mortar joint and whitened or coloured in distemper, whilst the ceilings are formed by the floor-boarding of the upper rooms, the joists showing beneath unwrought, save for a rough chamfer on the edges, adze worked. These are whitewashed. The floor boards are of elm, stained dark, the doors of unstained elm, with ash ledges and wrought-iron Norfolk latches. The oak beams are adze wrought and covered with whitewash, rubbed off when dry. Thus a cottagey character is imparted which combines with the merits of the plan to form an effective interior. The attractiveness is enhanced by the antique furniture which has been supplied by BAILEYS, LTD.

Another interior, of which we give a view, obtains its effect from the provision of a large living room, 24 feet 6 inches by 14 feet 6 inches, with a carefully-designed ingle treated in revealed red brick, with white mortar joints and full of thought in detail, notably in the use of blue and white Dutch tiles and of bull-nose bricks to the fireplace arch. This is found in Messrs. FAIR & MYER's house, designed for Class I. The walls and ceiling in this case are of plaster with dark brown beams. This interior is rendered the more complete by being furnished by Messrs. HARRISON, GIBSON & Co., of Ilford.

Messrs. FORBES & TATE have contrived an effective interior with two living rooms connected by a wide opening, a peep in which we also illustrate. They have made special features of their fireplaces, which are carried out in revealed Dutch bricks and very wide mortar joints. We rather doubt the wisdom of the extremely coarse texture of this treatment for interior walls. The walls in this house have the bare brickwork covered only with

paperhanger's canvas and distemper, the use of plaster being confined to the ceilings. Thus a texture is given to the wall surface that is decidedly effective without being costly, and a little less brusque than bare brick. The house has been furnished by Messrs. HINDLEY WILKINSON.

As an example of staircase treatment we give a view from the front door of that in the house for Class I., signed by Messrs. BAMFORD & AITKEN, which is one of the most successful to be seen in the exhibition.

These examples we have illustrated may be taken as samples of the care that has been given by many of the architects whose work is on view at Gidea Park to provide not only picturesque exteriors for neighbours and passers-by but pleasant interiors for their occupants instead of the banality that marks the usual je ne sais what of the builder's middle-class villa residence.

From the plans that are given in the catalogue of the exhibition, it may be gathered that there are many other instances of highly satisfactory interior treatment, some of which, however, are even yet not complete, such as the house, No. 229 in Reed Pond Walk, designed by Mr. CECIL A. SHARP, and No. 239, also in Reed Pond Walk, by Messrs. BARRY PARKER & RAYMOND UNWIN.

One element that we see makes for pleasant interior effect when rooms open into each other is the variation of lighting that ensues from windows with different aspects, but some of the designers in striving for these effects have committed the error of putting in too many windows. This is a fault, however, that is not so apparent when the houses are unfurnished than it is when occupied, for the modern middle-class housewife with her inordinate love of curtains will very soon reduce any excessive brilliancy of lighting.



ENTRANCE HALL IN HOUSE AT GIDEA PARK.
Messrs. BAMFORD & AITKEN, Architects.

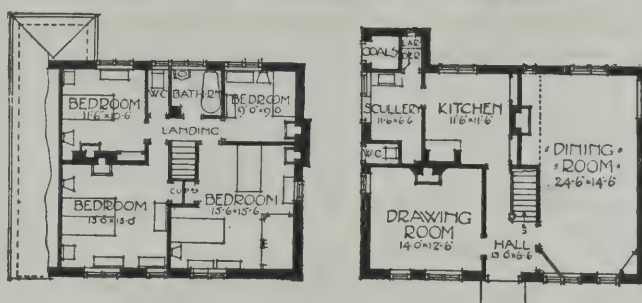
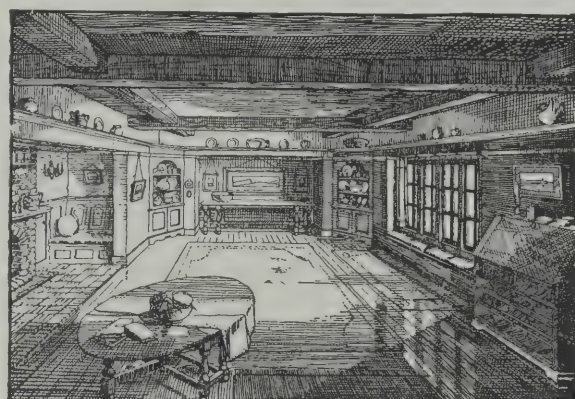
Nevertheless a point to be remembered that a small house could not be over-windowed, both for æsthetic and practical reasons. Windows on too many sides of a room destroy contrast of light and shade, and reduce all surfaces to an even flatness of illumination which is very uncomfortable. An excess of window means also an undue increase of cost alike in building, furnishing, and keep, as well as greater susceptibility to variations of the external temperature.

Whilst in a house that is to be occupied all the year and it may seem to be impossible in this country that we can have too much sunlight, we have been reminded during this present month that even in England we may, on occasion, long for shade, and thus it is scarcely wise to so plan a living room that it will receive sunlight all day, although it is undoubtedly desirable that, with the exception of one or two offices, each room should receive sunlight at some portion of the day.

We are pleased to notice that whilst ingles are not frequently introduced into the houses at Gidea Park, there is a recognition amongst our up-to-date architects that they should not be nooks, but be so arranged that radiated heat from the fireplace should extend its influence over a considerable area of the room. Thus the æsthetic value of the accentuation of the hearth, as the focus of the room is preserved without sacrifice of its utility as the source of warmth and comfort.

THE ARCHITECT" STUDENTS' SKETCHING AND MEASURING CLUB.

Too many of the drawings submitted for May fail to attain the position of water-colours. They are either tinted pencil drawings and sometimes differ only by fraction from the style of everyday coloured geometrical working drawing. In a water-colour drawing it is essential for a student to steer absolutely clear of the diagram, which is the usual form of an architect's working drawing. There should be no visible lines, but only surfaces which may be distinguished from each other by variation of



£500 HOUSE AT GIDEA PARK.—Messrs. FAIR & MYER, Architects.

colour or of tone. Care must be given to prevent the surfaces being flat tints, as they would be usually in a working drawing. There must be variation of tone and tint, and in technique the student should endeavour to work with a full rather than a dry brush. Colour should be left to dry as it falls, and not dragged about and worried while it is wet. Practice will bring facility in laying on the right colour.

Mr. W. A. ROBB sends a sketch of Cullen House, Banffshire, which is a charming example of Scottish baronial architecture. In Mr. ROBB's drawing the building is framed in masses of foliage, the colouring of which is defective in values and unpleasantly hard at the edges.

"Sans Peur" is working on the right lines, as shown in the three sketches he submits of St. Mary's Church, Ponteland; an old house, Shieldfield Green, Newcastle-on-Tyne; and the entrance to the Black Gate, also at Newcastle-on-Tyne. The drawing of the church is rather low in tone, and requires more strength in the foreground. The colour in the sky has been too much worked over. The old house is better. The gateway is rather false in values, particularly in the shadows. "Sans Peur" must keep his brush full and let his colour dry without worrying it.

Mr. T. OWEN THIRTLE contributes a drawing of Bishop Hall's Palace, Heigham, Norwich, which shows promise but suffers from the conventional blue colour applied to all the windows, which is false to reality, and the hardness of his foreground, with its over-brilliant colouring of the flower borders. Mr. THIRTLE should practice the use of full untouched washes from a wet brush.

"Le Quayt" has drawn the Blind School at York, and produced a pleasant sketch, although dependent rather too much on the pencilling to be entirely satisfactory as a water-colour. The composition of his subject is good, and the general effect is pleasing as a tinted pencil sketch, but would be better for more strength in the foreground.

Mr. E. H. GIBSON handles his brush well in his drawing of Knaresborough Church, but has filled too much of his paper with the building to make a picture, as there is virtually no foreground. It should always be remembered that the "middle distance" is the proper place for the building in a picture of architecture. The drawing gives the idea of having been painted at a lengthy sitting, during which the author has been unobservant of the sun's progress; hence the lighting is false.

"Reynard" sends a view of the North Choir Aisle of St. Bartholomew the Great, Smithfield, London, which is a good piece of water-colour work, but with some exaggeration in the purple of the shadows. The drawing is a good study of light and shadow.

"Plato" contributes three water-colour drawings from Oxford, showing Merton College Tower and Corpus Christi Gateway, Magdalen College Tower and Christ Church Cathedral. These are all good examples of water-colour in a bright, high key, with due regard to composition. The least successful in colour is the drawing of Magdalen.

We have decided to divide the prize for this month equally between "Sans Peur," "Le Quayt," "Reynard" and "Plato."

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A MEETING of the Royal Institute was held on Monday, June 12, Mr. E. Guy Dawber, Vice-President, in the chair. The receipt of a large number of donations to the library was announced. Six Fellows and nine Associates were elected, and the nomination was announced of 397 candidates for Licentiatehip.

Mr. ERNEST RICHMOND, Licentiate R.I.B.A., then read a paper on

Building Methods in Egypt.

The manner of life in an Egyptian town or village, to which the houses give outward expression, is, he said, as far removed from modern European life as the houses themselves are ill-adapted to European requirements. The Egyptian word for house is derived from a root meaning to pass the night. The buildings look as if they were never repaired, and many of them as if anything short of reconstruction would be impossible. Their dilapidated appearance is to be largely attributed to the condition of the surface rendering of the walls.

The prevailing physical conditions of the country may be said, broadly speaking, to arise, on the one hand, from the annual miracle of the Nile flood, and, on the other, to the daily miracle of the Egyptian sun. During the flood season a building's foundations are in water or in mud; and, after the Nile has fallen, on hard-caked clay. These changes do not take place without some effect upon the foundations and superstructure. There is also an extensive range in temperature, not only between winter and summer, but between night and day, producing stresses greater than a wall can resist. Further, the atmosphere is remarkable for its dryness. The floor of Egyptian towns has not been laid down by the Nile, as is the case of the surrounding cultivated land, but has in the first instance been deposited by man, with the object of attaining a ground-level for buildings above the reach of floods. The levels of towns and villages have progressively risen through the ages. A desert site may be sandy or rocky; in the former case the watering of the gardens round the house may result in foundation settlements.

In both the ancient buildings and the mediæval monuments of Egypt the tendency was towards keeping the foundations as near the surface as possible. In ancient Egypt there can hardly be said to be any foundations at all, and no attempt was made to obtain equal intensities of pressure upon the ground or to restrict the intensity to as low a unit as possible. The foundations of the mediæval buildings in Cairo are taken well below the ground-level, but never to a depth sufficient to reach the level of permanent saturation. The depth depended, probably, on that of the surface rubbish, which, in a comparatively modern town such as Cairo was not great enough to involve much excavation. Modern

Egyptian builders also dig until they get through the surface earth and reach the naturally deposited alluvium, or, as they term it, the "black mud." In the ancient towns, to dig down to the original ground would be out of the question. For excavation in such places a rule of thumb is followed by the natives. For two-storey houses they dig to a depth of two metres and a half, and for three-storey houses three metres or three metres and a half. Buildings in the highest parts of ancient towns must necessarily stand upon foundation beds of "made" earth compacted only by time.

The original building material in Egypt was mud brick. This material is still used to a very large extent; and although, for important work, it has been replaced by stone and burnt brick, yet the traditional conception of walling derived from mud-brick construction has remained, throughout history, inherent in the Egyptian builder and it is possible to detect through all Egyptian work—ancient, mediæval, and modern—the dominating presence of those ideas which originated from mud-brick construction. The wall of a building in sun-dried brick and mud mortar is in Egypt a fairly homogeneous structure. It is otherwise with a building in stone; so stability was to be secured not by bond but by thickness, such as was given by three or more walls side by side. In modern Egypt one of the most noticeable features of native methods of walling is the absence of bond.

In native practice, the materials most generally used throughout Egypt are burnt brick and mud brick. Rubble stone is also employed, but principally in Cairo and Alexandria, owing to the proximity of convenient quarries. The tendency of an Egyptian mason, if left to himself, when using rubble stone, is to break it into small pieces approaching the size of bricks. The native-burnt brick is usually very rough; it is made of a mixture of mud and chopped straw cast in moulds, then built into clamps and burnt. The just proportion of width to length, necessary for bonding purposes, is not considered, nor is much attention paid to burning the bricks evenly. The materials used for the composition of mortars are Nile mud, fat lime, the dust resulting from crushing burnt bricks, sand, gypsum, and, lastly, "kosremil," which is the residue or ash of a fuel composed of street sweepings used for heating native baths. Various mixtures are used, depending on the locality and on the riches or poverty of the building-owner. The mortar must be prevented from drying too quickly and thereby crumbling to dust instead of hardening. The need for damp in walls built in mud mortar is exemplified by the objection on the part of many native builders to damp-proof courses.

With the materials described above thin, well-bonded homogeneous walls would neither be safe nor practicable. The Egyptian rarely, if ever, builds a wall less than half a metre thick. If rubble stone is used the masons work in pairs, one man on one side of the wall and his colleague on the other. Except that each proceeds at more or less the same pace there is little connection between their work. There is no through bond. Practically two thin walls are constructed independently, and the space in between is filled with small stones and large masses of mortar. The mortar, if it is of mud, kosremil, and fat lime, and if it keeps fairly damp hardens rather than sets. On the hardening of the mortar more especially on the outside of the joints, the stability of the wall largely depends, and, in order to fortify the outer joints and to render them as capable as possible of serving as small retaining walls, to any inferior mortar which may have turned to powder instead of hardening it is common to bed in the surface joints small pieces of stone. When fat lime and sand mortar is used the same practice is often followed, for it is recognised that this mortar sets only on the face. If the wall is constructed of brick hardly any more attention is paid to bond than in the case of a rubble-stone wall. The same mortars are used solely to provide beds on which to place successive courses of brick. A more or less systematic appearance of bond is given to the face, but the principle is not extended to the interior. Each course is constructed by laying bricks side by side about one centimetre apart; the vertical joints between the bricks are purposely left open. Native-built brick walls, like those in rubble, are rarely if ever less than half a metre thick. Such walls, whether of brick or rubble, and standing upon a foundation bed liable to frequent movements, would of course soon collapse unless the entire absence of bond in the masonry itself were not supplemented. The bond necessary for giving some degree of stability is provided by means of horizontal pieces of timber placed over and under all openings and forming lintels and sills. Ranges of these timbers are carried round the building, and similar ranges are bedded in the walls at the

levels of floors and roofs, where they form plates to receive the joints; and other timbers are placed, apparently promiscuously, in any position, independent of opening or levels of floors and roofs. The amount of timber judged necessary depends on the nature of the land built upon, more being used in buildings upon "made" soil, or in soil with an admixture of sand, than in those constructed on the black alluvium.

The surface of the wall is, when finished, provided with a rendering very generally composed of fat lime and sand, to protect the outer joints of the masonry from the destructive influence of the sun and wind. The joints would, without it, become cracked and gradually destroyed, and so prepare for the gradual collapse of the building owing to the escape of the dried and crumbled mortar in the interior of its walls, unless built so phenomenally thick as to be disproportioned to an ordinary building.

The main characteristics of a wall such as that described appear to be its elasticity and the capacity it possesses to adapt itself in a certain measure to movements, both those in the foundation bed, caused by the rise and fall of the sub-soil water, and those in the superstructure itself, caused by stresses set up by changes of temperature. But such methods cannot produce a building which will not soon after completion begin to show signs of dilapidation. To maintain it in a state of repair considered essential by Europeans or those influenced by European ideas is impossible. The defects being obvious, it is not difficult to propose remedies whereby a more solid, a healthier, and a more fire-resisting building could be erected.

Up to a few years ago it was usual to lay down a thick raft of concrete. This method is now largely replaced by driving concrete piles about three metres apart and connecting the tops with beams of reinforced concrete on which the walls are laid. Broad-spreading foundations of reinforced concrete have also given good results. The introduction of new methods is by no means an easy task, nor is the result invariably successful. It has been found that it is not easy to determine the degree of rigidity which must not be exceeded. Almost as great inconvenience may be caused by too rigidly building a wall or roof as by one which is too loosely put together. Of the boundary walls, for example, enclosing various groups of buildings erected on a desert foundation near Cairo, some were built in bricks and cement mortar, others in bricks and local fat-lime mortar. Those built in cement mortar cracked vertically at intervals of from five to 20 metres throughout their length, while those built entirely in lime mortar were undamaged. It may be added that some walls were built in lime mortar, but with the top course of brick on edge set in cement mortar wherever this was done the cracks occurred about five metres apart; the cracks extended only through the top three or four courses.

There has been, and still is, a tendency to neglect the effects of temperature changes and to design without reference to them. Modern materials and methods are not unattended by dangerous, or at least highly inconvenient, results in Egypt, owing to the temperature conditions. It is a question yet to be answered how far the modern tendency towards thinness and homogeneity of construction are applicable in that country. This question can only be answered by continued experiment and research.

In Egypt there is, as yet, no established tradition capable of providing a suitable and complete guide when building for the fulfilment of modern needs. It is not, then, surprising that European builders have met with some experiences neither happy nor expected. The problem before them is of a twofold nature. How, on the one hand, to build so as to fulfil modern requirements in regard to stability, fire-resistance, health, maintenance, and repair; and, on the other, to keep within the limits imposed by local physical or climatic conditions. To find the middle way, and to make a satisfactory harmony between local conditions and requirements of foreign origin must be an object of the architect as well as of other workers in Egypt.

Mr. R. WEIR SCHULTZ, being asked by the chairman to propose the vote of thanks, said he presumed he had been called upon to speak first because of the fact that he had the pleasure of visiting Egypt over four years ago, and very interesting it had been. The Royal Institute were fortunate in having Mr. Ernest Richmond to speak to them on Egyptian methods of construction, because there was no one better qualified. It seemed to be only the other day that one was congratulating him on a chance of going out to Egypt

in connection with some work being carried out by Mr. Somers Clarke. Afterwards he joined the department for the repair of ancient mosques; and later he went on to the War Office, where he had to deal with buildings of all classes. Finally, the Department of Public Works recognised a good man; and Mr. Richmond now acted as director. When he (the speaker) was in Egypt his visits included several to works done under the direction of Mr. Richmond; in every case the building was carried out with great care and in a manner suitable to the purposes for which it was intended. There was in them no attempt to copy forms which were of no use or to imitate appearances of old work where such would have been out of place. One of the great difficulties in Egypt was, as they had been told, the putting up of buildings for Europeans by workmen who do not understand the conditions under which Europeans live. It was a pity that Mr. Richmond had not time to talk about native craftsmanship, such as woodwork and plasterwork, for there was still a good deal done in this direction from which Europeans could learn. Craftsmanship in Egypt was very much alive. Some time after his own return he heard there had been an attempt made to promote it. In response to an advertisement a very able man, imbued with enthusiasm, went out from this country to direct the movement, and he took with him models of work done in schools in London. But shortly after they arrived they crumbled.

Professor FLINDERS PETRIE said the paper was an exceedingly interesting one as explanatory of ancient methods, as showing what were the necessities of modern times, and how successfully they have been met. They must remember that anyone wanting to build in Egypt had to deal with a people as they were, and not with European workmen. Mr. Richmond had shown the contrast between Eastern and Western methods. The native methods were certainly the most successful for native requirements. It used to be a custom to build "corrugated" walls, which got over the whole difficulty of contraction and expansion. The introduction of timber was very interesting; pieces of walling going back further than the Pyramids showed the timber inserted. He would suggest it might be worth while facing the foundations with a damp-proof course on each side.

Mr. SOMERS CLARKE said it was a great pleasure for him to join in the vote of thanks because he and Mr. Richmond had often talked over the subjects dealt with in the paper. He would like to congratulate the public, Mr. Richmond, and the Egyptian Government on the fact that the lecturer did not, like so many Europeans, consider that all natives were more or less idiots and that all their ways must be foolish. The Egyptians have a long tradition behind them extending from three or four thousand years down to our own time. A great number of things which Europeans think so clever are by no means so suitable when transported to the country of a people deemed rather silly. No reference had been made to the extreme alteration occurring in the mass of a wall by the very gradual dryness. Many of the characteristics of Egyptian building which at first sight seem dangerous are in reality safeguards. From about the twenty-sixth dynasty the Egyptians began to make very decent foundations; in some cases there were six or seven courses of masonry underneath an ancient structure. The ancients evidently were conscious of the necessity of allowing for movements below ground. The skin of the great Pyramids had abundance of room to expand and contract.

Mr. R. PHENE SPIERS said he had while listening noticed that the French authority, Monsieur A. Choisy, seems to have been struck by the same facts and to have arrived at the same conclusions as Mr. Richmond. They were all glad to know that the Egyptian Government had someone who will take care of their ancient monuments. At the time of his own visit many years ago the buildings were left to look after themselves.

Mr. GUY DAWBER, the chairman, then formally put the vote of thanks, which was carried with acclamation.

Mr. RICHMOND, in reply, said that in the case of one or two old buildings they had tried the efficacy of using a vertical damp-proof course, and so far it seems to have been a success.

At the conclusion of the meeting, Senor MARIANO E. CANNIZZARO briefly addressed the audience on the subject of the forthcoming International Architectural Congress in Rome in connection with the Exhibition, and he gave a warm invitation to his English colleagues to attend. It is hoped to conclude it with a visit to Venice where the completed Tower of St. Mark's will be seen.

THE ANNUAL ELECTIONS.

At the business general meeting the officers, Council, and Standing Committees for the ensuing session were declared duly elected, in accordance with the scrutineers' reports, as follows:—

THE COUNCIL.

President.—Leonard Stokes.

Past-Presidents.—Thomas Edward Colcutt; Ernest George, A.R.A.

Vice-Presidents.—Reginald Blomfield, A.R.A.; Edward Guy Dawber; Ernest Newton, A.R.A.; John W. Simpson.

Hon. Secretary.—Henry Thomas Hare.

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Associate Members of Council.—Sidney Kyffin Greenslade; Walter John Tapper; Harry Inigo Triggs; Herbert Winkler Wills; Arthur Needham Wilson; Septimus Warwick.

Representatives of Allied Societies.—Henry Clement Charlewood (Northern Architectural Association); Sydney Decimus Kitson (Leeds and Yorks Architectural Society); Edgar Wood (Manchester Society of Architects); James Jerman (Devon and Exeter Architectural Society); John Brightmore Mitchell-Withers (Sheffield Society of Architects and Surveyors); Albert Edward Murray (Royal Institute of the Architects of Ireland); William Fleming Wilkie (Dundee Institute of Architecture); Cecil Locke Wilson (Cardiff, South Wales, and Monmouthshire Architects' Society); Joseph Foster Wood (Bristol Society of Architects).

Representative of the Architectural Association.—Gerald Callcott Horsley.

Auditors.—John Hudson; William Henry Burt.

THE STANDING COMMITTEE.

Art.—Fellows: Cecil Claude Brewer; Walter Henry Brierley; Walter Cave; William Flockhart; William Adam Forsyth; Gerald Callcott Horsley; Thomas Geoffrey Lucas; Edwin Landseer Lutyens; Ernest Newton; Edwin Alfred Rickards. *Associates:* Sidney Kyffin Greenslade; John James Joass; Walter John Tapper; Harry Inigo Triggs; Septimus Warwick; Arthur Needham Wilson.

Literature.—Fellows: Frank Thomas Baggallay; John Alfred Gotch; William Curtis Green; David Barclay Niven; George Halford Fellowes Prynne; Halsey Ralph Ricardo; Charles Sydney Spooner; Sir Alfred Brumwell Thomas; Edward Prioleau Warren; Percy Leslie Waterhouse. *Associates:* Walter Millard; Herbert Passmore; Charles Edward Sayer; Cyril Wontner Smith; Arthur James Stratton; Herbert Winkler Wills.

Practice.—Fellows: Robert Stephen Ayling; Howard Chatfield Clarke; Alfred William Stephens Cross; Matt. Garbutt; Albert Walter Moore; Charles Stanley Peach; Sydney Perks; Herbert Duncan Searles-Wood; Henry Tanner, Junr.; William Woodward. *Associates:* Kensington Gammell; John Nixon Horsfield; Charles Edward Hutchinson; Herbert Hardwicke Langston; Herbert Shepherd; Harold Arthur Woodington.

Science.—Fellows: Harry Percy Adams; Max Clarke; Frederic Richard Farrow; Ernest Flint; Horace Gilbert; George Hornblower; George Hubbard; John Murray; Ravenscroft Elsey Smith; William Henry White. *Associates:* George Leonard Elkington; Charles John Marshall; Alan Edward Munby; Digby Lewis Solomon; Ernest William Malpas Wonnacott; Ernest Alexander Young.

THE CONCRETE INSTITUTE.

A TWO-DAYS' Summer Meeting of the Concrete Institute was held at Denison House, 296 Vauxhall Bridge Road, S.W., on Wednesday, the 7th inst., and Thursday, the 8th inst.

Wednesday, June 7.

At the first meeting the chair was taken by Sir Henry Tanner, I.S.O., the President. The principal business was a paper by Professor Beresford Pite, F.R.I.B.A., on "The Æsthetic Treatment of Concrete."

Simplicity of intention in constructional design may issue, he said, in a native or spontaneous æsthetic quality.

For example, an undesigned beauty reached without treatment is often attained by such a structure as the Forth Bridge or a ferro-concrete silo. Again, mediæval architecture grew up as a constructive method without æsthetic purpose, and yet achieved results of great beauty. Consequently, he asked, "Is not the opportunity given by the new process of reinforced concrete building one that could be utilised for the erection of the much-desired original and modern style of architecture? Are the new material and method together sufficient motive?" It had to be asked whether truthfulness of design to constructive purpose and elemental soundness of proportion were in themselves sufficient to provide that pleasantness to the eye which is desiderated. Four conclusions might be safely drawn: First, we have no instinctive guidance towards an unbiassed originality for a concrete architecture; second, abstract principles like those invoked of proportion are of no assistance; third, superficial treatments, as by colour, are insufficient for architectural expression, though valuable in assistance; fourth, the texture of concrete surfaces modifies and imparts special character to any forms employed for architectural purposes. Therefore, while modern considerations of utility and of novel constructional methods determine proportions, and may ultimately develop æsthetic qualities, the scholarly and critical analysis and employment of traditional architectural forms suitably modified for execution in concrete is the proper method for the æsthetic treatment of concrete. A historical review of the development of some characteristics of Egyptian, Greek, and Roman architecture furnishes proofs of the non-relation of æsthetic treatment to direct constructive facts. Idealised representations of ancient types form the basis of both Egyptian and Greek characteristics, while the Romans frankly separated the decorative from the practical purposes of architecture. In Gothic art, however, the constructive craftsman was the artist, and the development of decoration is integral with building craft. In other crafts, like wood and plaster work, motives are imitated from stonework, and illustrate the modifications produced by the texture of the material into the design of details—of this the Elizabethan ornamental plastered ceilings originating from Tudor vaultings are illustrations. Modern novelty of constructive method does not remove a necessity for study of architectural development. The latter will aid adaptation and modification, and thus pave the way for development. Modern Continental design is too eager to demonstrate that elasticity possible in employment of form in unusual architectural relations. At home we still are safely and timidly putting brick and stone fronts to concrete buildings. There is a great future before concrete building, and it deserves that close and patient architectural study which, deriving from the past, will give certainty to the future æsthetic treatment of the material.

Mr. H. H. STATHAM, F.R.I.B.A., in opening the discussion, said he had been waiting rather anxiously throughout the paper to discover to what conclusion Professor Pite meant to lead. He (the speaker) quite agreed with all that had been said about the great importance of texture in treatment. The use of a brick and stone facing might seem an easy and not very sincere way out of the great difficulty in concrete architecture; but it was the way employed by the greatest builders of all time, and there was something to be said for it. Reference had been made by Professor Pite to the origin of Egyptian and Greek architecture; but, personally, he was rather sceptical about the mud origin of the one and the wood origin of the other. The conclusion which seemed to emerge from the paper was that we might hope to originate an æsthetic treatment of concrete without altogether forgetting architectural tradition.

Mr. ALBAN H. SCOTT thought it would be rather difficult for anyone to give a direct and open architectural treatment to concrete itself—particularly in towns like London. For instance, it was not easy to see how a building such as the new General Post Office (of which their President, Sir Henry Tanner, is the architect) could have been treated in such a way. The great trouble looming in the future seemed to be a danger that the engineers would get the work in concrete instead of the architects. Speaking generally, it seemed a shame to cover up good concrete by a surfacing material. The concrete did not require such protection if it was properly treated. An exception to this rule was in the case of an elaborate colour scheme. At present the tendency should be towards simplicity by getting rid of as many mouldings as possible.

Mr. EDWIN O. SACHS, Vice-President, remarked that the paper read was above the lecture-room, and it required sitting down to and quietly thinking out. In the course of

the discussion Mr. Scott had suggested that concrete would be in a bad way if it got into the engineers' hands. With this view he begged to differ. If buildings expressed their purpose splendidly and gave an excellent idea of how the material had been used to the best advantage, it was a pleasure to look at them. The Forth Bridge is an expression of beauty, *i.e.* of something beautiful and economical. Assouan Dam was, to his mind, one of the most beautiful of structures, simple though it was; its few features which struck the eye were all utilitarian. Personally, he believed concrete architecture might find its salvation in the hands of civil engineers, especially if they did not forget to use a surface treatment. In Austria one found innumerable excellent examples of the latter. It became a little more expensive than a plain treatment, but its cost was by no means such as to render it prohibitive.

Mr. J. ERNEST FRANCK remarked that if in the future he, as an engineer, had to design buildings which would be called upon to have a kind of beauty, his aim would be to largely employ vertical lines and to avoid certain kinds of surface treatment. It might be presumed from what Professor Pite had contended that beauty was a thing which never changed. But surely that view was scarcely a correct one. Different races and different times had different standards. If this were so, it was not easy to see why the present generation should always strive after what had gone before. Rather, a new material should be allowed to bring its own ideas of beauty.

Mr. ALFRED E. CORBETT, F.R.I.B.A., thought that Professor Pite had somewhat left out the engineering side of the matter. Work in the new material should be done by an architect who had had a very thorough training in engineering, or by an engineer who had carefully studied architecture. An excellent opportunity for æsthetic experiments in concrete was afforded by buildings like warehouses, in which the client did not expect very much.

Mr. R. M. FRASER regretted there had not been a summing up at the end of the paper in the shape of a few broad principles, and also that the paper had not been on the far more useful subject of "The Æsthetic Treatment of Reinforced Concrete." Concrete without reinforcement was quite different from that material reinforced. He wondered whether some classification (like "the architecture of the bracket") could not be found for reinforced concrete, in the same way as they had the architecture of the beam and the architecture of the arch. There seemed to be no reason for regarding the use of stone with concrete as anything blasphemous, any more than its present use in London with brick was so regarded. A particularly suitable treatment for it was by the application of mosaic.

Sir HENRY TANNER, I.S.O., &c., who closed the discussion, said it seemed to him that reinforced concrete structures should be considered from different standpoints according to circumstances. For instance, one of that material in a town required to be different to one in the country. A front in pure unadorned concrete would not be suitable in a city, because people would not consider it important enough. It was that fact that had led him to adopt a stone front for the General Post Office. All the important neighbouring buildings round about had fronts of stone. Of course, one had as far as possible to use discrimination. In warehouses one came to a class of structure calling for a more visible use of concrete.

Professor BERESFORD PITE, F.R.I.B.A., before replying to some of the points raised, suggested that after the paper had been officially circulated an extended discussion might be accorded to it. When the paper was put into print and read it would be found that the conclusions arrived at were logical and definite. The positive conclusion was that a study of ancient art must be the guide in an æsthetic treatment of concrete. He entirely disputed the right of the engineering profession to attempt to æsthetically deal with the material without special training. If they knew the guiding principles he would listen to what they had to say with pleasure. But they did not know them, and there was no evidence in their work to suggest that they did. All that engineers could do was to build soundly, honestly, and naturally, and thus unconsciously make their work æsthetic. It is only when the engineer consciously strives to add beauty to his work that he shows the cloven hoof. Engineers should leave this subject alone. It was impossible to separate concrete buildings from the laws which govern all other buildings. The language one speaks, the music one hears, and the architecture one sees are all the result of a long process of evolution, and all require time and training for their mastery. On such a subject as the æsthetic treat-

ment of concrete the architect has a right to speak with authority. It had been suggested that his own remarks advocating the façade treatment were somewhat cowardly. But what he had meant was that until we progressed in the adaptation of architectural form to the new material the path of least resistance was to mask the qualities of concrete by a surface treatment. As to the General Post Office, no one would expect Sir Henry Tanner to embark upon æsthetic experiments in the heart of the City of London. There was such a thing as an ultimate standard of beauty. Undoubtedly what is beautiful to the Asiatic might not be beautiful to Europeans, and *vice versa*. But there were elements common to both. The fact that one can to-day enjoy the forms which pleased the ancient Greeks shows that there is something to grip. An engineer going into Westminster Abbey is cowed by it, without knowing why. But it was the architect's business to know why. The engineer is merely concerned with the stresses and vaults.

In the afternoon a visit was paid to the Wesleyan Memorial Hall, Tothill Street, Westminster, by permission of the architects, Messrs. Lanchester & Rickards. In the evening the first annual dinner was held at the Trocadéro Restaurant, W., the members being received by the President, Sir Henry Tanner. Among other guests of the Institute were the following:—Mr. Alexander Siemens, President of the Institute of Civil Engineers, Mr. W. Edgar Horne, President Surveyor's Institute, Mr. H. Percy Boulnois, Chairman of the Council of the Royal Sanitary Institute, Mr. R. Elliott Cooper, the Chairman of one of the Sections of the Engineering Standard's Committee, Mr. Leslie H. Robertson, the Secretary of the same Committee. Among others present were Mr. Horace Porter, A.R.I.B.A., Mayor of Holborn, Mr. W. Woodward, F.R.I.B.A., Mayor of Hampstead, Sir Alexander Stenning, Mr. John Murray, F.R.I.B.A., Mr. Osborne Smith, Mr. F. A. White, Mr. Max Clarke, F.R.I.B.A., late Mayor of Holborn, Mr. F. H. A. Hardcastle, A.R.I.B.A., Mr. T. M. Deacon, Mr. Edwin T. Hall, Vice-President R.I.B.A., and the following members of Council of the Concrete Institute:—Mr. Alexander Ross, M.Inst.C.E., Vice-President Concrete Institute, Mr. Edwin O. Sachs, F.R.S.E., Vice-President Concrete Institute, Mr. D. B. Butler, Mr. C. H. Colson, Mr. J. S. E. de Vesian, Mr. William Dunn, Mr. E. Fiander Etchells, Mr. J. Ernest Franck, Mr. C. S. Meik, Mr. H. D. Searles-Wood, Mr. Henry Tanner, Mr. E. P. Wells, Mr. F. E. Wentworth Shields, and Mr. G. C. Workman. After the patriotic toast from the Chair, Mr. Alexander Siemens, President Inst.C.E., proposed the toast of the Concrete Institute, which was replied to by Sir Henry Tanner, I.S.O. The toast of the visitors, proposed by Mr. Edwin O. Sachs, was replied to by Mr. H. Percy Boulnois, M.Inst.C.E., Chairman of the Council of the Royal Sanitary Institute. The toast of the Chairman, proposed by Mr. F. A. White, was given with musical honours, and was briefly acknowledged by Sir Henry Tanner. During the evening a programme of music was performed by Miss Olive Fox, Mr. Lorne Wallet, and Mr. Wilson Martell.

Thursday, June 8.

The report of the Reinforced Concrete Practice Standing Committee on the "Standardisation of Drawings of Reinforced Concrete Work" was presented, of which the following is an abstract:—

In connection with the scales to be used for drawings inquiry forms were sent to all the best known contractors and specialists undertaking reinforced concrete construction, but only a small number returned these forms filled in. No adequate classification of the practice among the contractors could therefore be arrived at from these inquiry forms, and the matter has, therefore, been considered from what is generally known of the practice of various specialists.

A great number of scales have been, and are, employed by architects and engineers, but only a few are generally adopted. These few can be used to fulfil almost all requirements. Of course, a scale is fundamentally chosen to suit the conditions of the extent of the job and the size of the drawing paper, having due regard to clearness. A large scale is desirable, but it must not be inconvenient. Some scales are too small, others too large, and certain scales are, therefore, eliminated from customary use.

One-tenth inch scale is applicable to decimal equivalents, but it is too small for general use, and, therefore, is seldom adopted.

One-eighth inch scale is customary among architects. It is not unwieldy for jobs of a fair size, but for very large jobs a smaller scale is naturally found advantageous, and then it is the custom to halve the $\frac{1}{8}$ -inch scale and use $\frac{1}{16}$ -inch

scale. As regards their use for drawings of reinforced concrete work, $\frac{5}{8}$ th and $\frac{1}{4}$ th scales would be satisfactory for general plans, elevations, and sections which do not show the reinforcement. They become distinctly serviceable for sketch designs and general schemes, because they conform to the architect's other drawings, and are therefore comparable.

One-eighth inch is too small for showing the placing of the reinforcements, although certain contractors have found it handy in some cases, having been able to give a clue to the arrangement of the reinforcement in floor slabs by drawing a few lines lattice-wise in a portion of each slab and writing thereon the pitch or spacing of the bars.

The $\frac{1}{4}$ -inch scale is too large for general plans, and is seldom used even for jobs of moderate size. Sometimes $\frac{1}{4}$ -inch scale can be used with advantage on large jobs for detailing in a diagrammatic way, it being possible to roughly show the disposition of reinforcements and the framing or arrangement of beams.

The $\frac{3}{8}$ -inch scale is seldom used.

The $\frac{1}{2}$ -inch scale is used by some specialist engineers for elevations and sections of beams and floor slabs, and is convenient in so far as drawings to this scale do not take up much room, but $\frac{1}{2}$ -inch scale is too small to enable details of the arrangement of the reinforcements to be shown in any but a diagrammatic way. Half-inch scale drawings for reinforced concrete are often supplemented by sections and details to $\frac{1}{2}$ -inch or 3-inch scales.

The $\frac{3}{4}$ -inch scale does not apparently meet with favour as a scale, though it represents $\frac{1}{4}$ th full size.

One inch is a very useful scale, and is generally preferred to $\frac{3}{4}$ -inch. It is sufficiently large to conveniently show a fair amount of detail, and occupies an intermediate position between $\frac{1}{2}$ -inch and $1\frac{1}{2}$ -inch scales. But the 1-inch scale is often too large for detail drawings of long beams, and takes up much time in the drawing-office, where it is as desirable to study economy as on the works.

The $1\frac{1}{2}$ -inch scale is $\frac{3}{4}$ th full size, and it is useful to remember that $\frac{1}{2}$ -inch to this scale represents 1 inch, so that we can use an $\frac{1}{8}$ th-inch scale to read off inches on $1\frac{1}{2}$ -inch scale drawings.

The 2-inch scale seems to be used by only one firm of reinforced concrete specialists, and is, therefore, not usual.

The 3-inch scale is one-quarter full size—a handy ratio—and works well for details of specially intricate work.

Half-full-size is often used for architectural details, but it is generally too large a scale for reinforced concrete work.

The following are, therefore, suggested as the best scales for standardisation for the preparation of drawings for reinforced concrete work:—

For general drawings.

Showing schemes in outline without detailing the reinforcements: $\frac{1}{2}$ -inch scale ($\frac{1}{8}$ -inch scale to be substituted for $\frac{1}{2}$ -inch scale for large jobs).

For detail drawings.

For framing plans and slab reinforcements: $\frac{1}{8}$ th-inch scale.

For elevation of beams, &c., and general detail drawings: $\frac{1}{2}$ -inch scale ($\frac{1}{4}$ -inch scale to be substituted for $\frac{1}{2}$ -inch scale for large members).

For sections of beams, &c.: $1\frac{1}{2}$ -inch scale.

For large details of intricate work: 3-inch scale.

Thus we have, generally speaking, three scales— $\frac{1}{8}$ -inch, $\frac{1}{2}$ -inch, and $1\frac{1}{2}$ -inch. These three scales, it is suggested, are sufficiently elastic for ordinary work, and for very large jobs smaller scales can be substituted as suggested above.

All dimensions should be figures on the plans, and nothing left to be scaled.

It is suggested that the size of sheets upon which drawings are made should be standardised. For general purposes two sizes are advocated, namely, 40 inch by 27 inch, and 20 inch by 27 inch. Larger sheets would be of the same depth, 27 inch, but of greater length. These are measurements within the margin line, which latter should be ruled upon the tracing cloth, and photographic prints should be trimmed to this ruled margin line. These sizes have been chosen for the reason that tracing cloth usually measures 29 inch to 30 inch wide, while photo-printing paper when trimmed is about 28 inch wide. The suggested standard sheets are therefore proportionate to the tracing cloth and to photo-printing paper. If a special marginal line is required on a photographic print it should be drawn inside the ordinary marginal line referred to above, which line constitutes the full size of the sheet when trimmed.

As regards the indication of reinforcements upon the plans it is suggested that it will be found convenient generally on $\frac{1}{2}$ -inch scale drawings to show main bars by means of thick

solid lines, secondary bars by means of lines of medium thickness, and the outlines of the concrete and other work by means of thin lines. Working with this small scale it may often be found an advantage to omit the reinforcements in adjoining members, as, for instance, the bars in floor slabs when drawing elevations of T-beams, as otherwise the main reinforcements may be obscured.

In $1\frac{1}{2}$ -inch and 3-inch scale drawings it will often be found advisable to show bars, when not of very small size, by means of double lines. The lines should, however, be strongly drawn.

Sections will often require picking out. Hatching is often employed, but if adopted it should be very open, for it should be recollected that if the drawings are reproduced and reduced in size by photographic means, which may very possibly take place, and should be provided for, the closely-placed lines will run together. Many draughtsmen prefer, however, to indicate the concrete by marks intended to show stones, as it is claimed that hatching takes longer to do and requires great care to ensure the lines being spaced regularly apart, without which the appearance is not good. There seems justice in this contention, and such marking for showing concrete is advised.

Reinforcements shown in section should always be blacked in. It is better to do this even on the largest drawings, because the drawings are made much clearer thereby, and too much emphasis cannot be given to the reinforcements, as the drawings are specially intended to indicate them.

Shading of bars should not be employed on anything less than half-full-size drawings.

It is inadvisable to colour drawings for reinforced concrete, and in drawing details, except of large size, i.e. 3-inch scale or half-full-size, it is not advisable to dot in the concrete in any way, as if at any time these are reproduced in catalogues or newspapers the great reduction that must occur will run these closely-spaced marks together and clog the work or perhaps make a solid patch of ink.

Titles should be put in the lower right-hand corners of all drawings, together with serial drawing numbers, this position being best for reference when drawings are kept either in rolls or flat in drawers.

As regards the lettering upon drawings, this should be large and open.

The report also recommends certain conventional signs for methods of terminating ends of bars and recognised abbreviations for descriptions.

(To be concluded.)

ILLUSTRATIONS.

WINDOW FROM THE OLD ASHMOLEAN MUSEUM, OXFORD.

THE old Ashmolean museum was built in the year 1682, and is popularly ascribed to Sir Christopher Wren. Authorities, however, differ on this point, and it is said by some to be the work of a local architect, named Wood. Before the removal of its original contents to the new museum it contained many priceless relics, including the collection of the two Tradescants, men of extensive knowledge in botany and natural history. It was restored in the year 1830 by the brothers Duncan and Professor Phillips. The drawing, by "Lot," was awarded a prize in "The Architect" Students' Sketching and Measuring Club.

THE RADIUM INSTITUTE, LONDON.
NEW OFFICES FOR THE ANGLO-AMERICAN OIL COMPANY,
QUEEN'S ANNE'S GATE, LONDON.

WE illustrate these two buildings as good examples of modern London architecture. The architect of the former is Mr. T. P. Figgis, F.R.I.B.A., and of the latter Messrs. Ernest Runtz, F.R.I.B.A., & Son.

OXFORD COLLEGE SERIES.—WORCESTER.

WE complete this week our series of views from Worcester College.

ARCH IN BOTANIC GARDENS, OXFORD.

THIS is the principal of the three gates designed by Nicholas Stone in 1631 for the Physic (now the Botanic) Gardens at Oxford. The commission was received from the Earl of Danby, whose bust is in the centre of the pediment, and who instituted the gardens "with a view to the general improvement in learning, and especially to the faculty of medicine." The figure to the left is no doubt Charles I., and that on the right is Charles II. An account of the gateway, with a detail drawing and plan, appeared in the course of an article entitled "Nicholas Stone's Work at Oxford," in *The Architect*, September 3, 1909.

COAL SMOKE ABATEMENT SOCIETY.

THE twelfth annual general meeting of the Coal Smoke Abatement Society was held on Tuesday, June 13, at the Royal United Service Institute, Whitehall, when Mr. William B. Richmond, K.C.B., R.A., D.C.L., the president, occupied the chair. Among those present were: Bernard Shaw, Esq., Dr. and Mrs. Harold DesVoeux, Mrs. Cloudesley Brereton, Lady Stanley of Alderley, Hon. Annetia Stanley, Professor Meldola, F.R.S., Lord Newton, Mr. Menzies, Dr. Lloyd Tuckey, Rt. Hon. Farquharson, Mr. F. Brodie, F.R. Met. Com., Mr. H. O'Reilly Stephens, Mr. and Mrs. King, Mr. Joseph Hurst, Mr. Alexander Ritchie, J.P., Mr. R. W. Granville Smith, J.P., L.C.C., and Mr. Lawrence W. Chubb, secretary.

Letters of apology for non-attendance were received from Messrs. Webster, Dr. Dudfield, Dr. Lessing, Mr. E. D. Simon, Mr. Wm. Nicholson, Principal J. W. Graham, Mr. Samuel Elliott, Mr. J. Jowett, and Mr. J. B. C. Kershaw, F.I.C.

Sir W. B. RICHMOND, in proposing "that the report and statement of accounts, as submitted, be adopted," spoke as follows:—

Again we meet to offer the report of the Coal Smoke Abatement Society. As in former years, so in this, we are able to report progress. The committee is able to ask for full confidence from subscribers and from the general public. Not only has the Society made its mark in England as thoroughly trustworthy, scientific, and therefore based upon no fads, but it is acknowledged as an authority in Denmark, Austria, Germany, France, Belgium, the United States of America, India, Japan, and Australia. A number of inquiries have been sent, during the last year, addressed to the Coal Smoke Abatement Society for advice and information from the above-named foreign countries. The evil we combat is widely spread, and there is evidently an awakening of public opinion going on over the civilised world, that a nuisance, and a very serious one, which can be abated and in time perhaps more than checked, is receiving serious attention. This movement in the shape of public attention to the subject is due to the great efforts made by our Society in the first place; a Society which has but a small income, of which every penny is cared for and is well spent. At the outset we are bound to tell you that to make the Society as efficient as it might become we need more subscribers; in short we need more money.

The progress made by the Society is being reported, and I beg not only this audience, but the public at large, to read carefully the report for this year, which is most reassuring and convincing. We also beg the Press to help us by the publication of our report, and if possible to give us leading articles in the principle daily papers.

Mr. Lloyd George, a *bête noire* to the inactive, has recently said:—"There is nothing more marked in this country—in most countries—than the contrast between the carelessness and the rigour with which the laws of property are enforced and the slackness and sluggishness with which the laws affecting the health of the people are administered. These health committees will be administered by the men themselves. It will be a great lesson in self-government. It will be the first time the workers of this country have been really federated for the purpose of administering affairs which are essential to their happiness and comfort."

This is a hopeful outlook. But will coal smoke and sulphuric acid ever come under the title of insanitary elements? Certainly not until the people listen to the medical profession, who say that they are, and to authorities with no aesthetic claim; that absence of light is not only depressing to the body but injurious to the mind. The public is hard to move, stubborn to the status quo, and to the immobility of the doctrine that what was good enough for our fathers is good enough for us, a maxim which leads to unprogressive stagnation in politics, in art, science, and all intelligent tendencies to progress which have in a measure relieved us from savagery and promoted what even yet is an incomplete civilisation.

The Coal Smoke Abatement Society has done, and is doing, a great work; perhaps I ought not to say so, but I do, not in view of any work other than initiatory that I may have done, but owing to the energy of our officers, Dr. DesVoeux, our treasurer, to Mr. W. H. Booth, who has been responsible for the training of stokers, and to Dr. John S. Owens, who has conducted numerous tests for the Society, to our admirable Inspector, Mr. Petty, who, practically single-handed, has done inestimable work, difficult and unpleasant at times, with energy and pluck, and last, not least, to our secretary, Mr. Chubb, do we owe many words of thanks—not

only we, but the public at large, for his tact, his application, and continuous initiative and wise supervision.

Our income is small, yet I doubt if any existing society makes the money at its command go further, or bases expenditure upon a more economical principle. Upon finance it is not for me to touch. Dr. DesVoeux will speak to you on that subject presently, when I fear you will hear that the Society is in great need of funds to carry on a work which is purely *pro bono publico*, has no axe to grind, no advertisers to promote, and no fads to encourage. Everything is hopeful save our financial condition, but I feel sure that when our subscribers and the public in general read this year's report we shall find ourselves next year able to report as much or more progress, and find ourselves with more money at our command, hence able to extend our work and necessary appliances towards greater completeness. When our crusade was started the clauses in the Public Health Act were practically in abeyance, the responsibilities of their enactment had been removed from the police and put into the hands of the L.C.C. and borough councils. The energetic action which the Society took in a measure caught on. The L.C.C., once cold to us, is now our warm friend who helps us as we help it. The borough councils in the majority of cases are doing their duty. We wish we could report the same energy on the part of the Local Government Board, but perhaps that body may in time be awakened by public opinion to a sense of its duty and carry out the responsibilities which Parliament has ordained it. Our motto is "More Light." Now let us see if that has been a successful selection.

The statistics of the Meteorological Society show that the average amount of winter sunshine in the Metropolis exceeds that available before the question of Smoke Abatement was seriously taken in hand. The increase of sunshine is no less than 60 per cent. The decrease of dense fogs is remarkable; you can read the account of it in detail in the report before you. This result is not alone due to the suppression of smoke from factories and trade concerns, but also to an increase in the use of gas for heating and cooking purposes, to the adoption of electricity and smokeless fuels such as anthracite, carbo, chavco, coalite, and coke. The principle gas companies supply of gas stoves, fires, &c., now exceeds 1,300,000.

Within the area of London there are 35,000 factories and workshops. When the Society began operations the large majority of these emitted black or destructive smoke. It is becoming otherwise now, for most manufacturers have learned that it is economical to consume and not to waste their coal. While this is so, and during the supervision of inspectors, ours and others, the smoke diminishes in quantity, but directly observation is withdrawn carelessness follows and fresh outbreaks are reported, and the whole game has to begin again, showing that strict observation has still to be kept if we are not again to lapse into a state of darkness—the result of carelessness or apathy. But there is a bad blot still to be wiped out. West Ham is the plague-spot of smoke. Outside the jurisdiction of the L.C.C. West Ham is still the great offender. The question arises, why is this? We can find no answer.

The neighbourhood of Greenhithe, a centre of cement industry under the control of the Dartford Rural Council, is under a constant pall of destructive smoke, which causes grave difficulties of navigation on the Thames.

During the year 1910 the Inspector of the C.S.A. Society reported 1,094 cases of nuisance; in several of these cases the manufacturers have paid attention to the Society's reports and have diminished the excess of smoke. But not all. West Ham remains actively defiant. We now come to perhaps the most important item of our efforts. If London is to be cleared of factory smoke the word "Black" will have to be deleted from the clauses in the Public Health Act. It must be done sooner or later, because public opinion will demand it. In 1910 the L.C.C. made a brave effort to this effect, which met with strenuous opposition on the part of the London Chamber of Commerce, the West Ham Corporation, and the electric light companies, for what reason they know best. That all smoke from factories and such like is preventable is now a truism. I have three within the vicinity of my property in Hammersmith which now emit no smoke whatever except upon rare occasions. When these occur I promptly write to the companies a complaint and details of times and duration of the nuisance, an answer arrives immediately, and the nuisance stops, the nuisance having been invariably due to careless stoking or change of coal. The companies are invariably courteous and thank me for my objection. This fact demonstrates beyond dispute that all smoke, not only black, is preventable. If it is so, the deletion of the word

"black" is in no sense unjust; it will only oblige companies to exercise more care, and, moreover, will save them money in the long run; therefore, what their excuse is is surely enigmatical. The experience of the celebrated decision of a magistrate in the Lots Road, Chelsea, case and the deterrent effect of it upon borough council's operations, demonstrates an imperative necessity for strengthening the law, only to be accomplished by the deletion of the word "black."

The emasculated clause approved by the Committee of the House of Commons authorises the County Council to take proceedings at the request of sanitary authorities, and in lieu of them to take proceedings. But until the word "black" is deleted there can be no real power in the Act, because black smoke is difficult to prove, for at different times of the day and in varying conditions of light what is in reality black may appear pale brown, grey, red, or even light against a storm cloud, and no patterns supplied to inspectors can be of direct or certain service. The C.S.A.S. intends to continue an agitation as far as possible for the deletion of the word "black," and the L.C.C. will doubtless in time find it imperative to support it. When it becomes law that all smoke is prohibited from factories half our labour will have been accomplished. The C.S.A.S. has taken part in conferences of the British Institute of Social Service; meetings also took place in Edinburgh, Glasgow, and Sheffield. The subject of smoke abatement has been brought before the Royal Institute of British Architects, and was ventilated at the British Association. Both of these powerful institutions are keenly alive to the necessity of strong legislation. The Right Hon. John Burns received a deputation from the Smoke Abatement League in 1910, and in his speech stated that "as an engineer he considered smoke to be useless, dangerous, and that it ought to be abolished; further, that a smoky chimney was a sign of waste, an evidence of defective consumption, and a proof of bad stoking." Such a strong expression of opinion coming from so practical an authority must carry weight with the public, and should do so also with all authorities from the House of Commons to the borough councils, and we firmly believe it will do so, if energy and vigilance in the cause are not relaxed, and with the help of the public we intend not to relax but redouble our observations and reports. Public opinion is roused, but not enough. We must go on repeating facts and instructing the public—slow to learn, and to move, but not hopeless—and the time must come when citizens shall say, "Why did we allow a preventable nuisance to take two centuries to overcome?" The power of the Press is of course enormous; it is in a sense the voice of the people which, when unanimous or even general, must be listened to by those in high places, who are there to carry out the wishes of a sensible democracy.

It is to public opinion that we appeal. We ask:—Do you like dirt better than cleanliness, darkness more than light, depression more than joy? We know what the answer is: No. Then why in the name of common-sense do you not unite and make a bold front with us and with all those who have at heart the general good of the community, making up your minds that a nuisance proved from every point of view, æsthetic, practical and sanitary, immoral in its effect on the poor, inconvenient to the rich as well as to the working classes, and say, "We will have no more of it"? Not saying only, for words without acts are useless, but acting not defiantly but strongly and persistently so that you *shall* and you *will* win. I conclude with a quotation from Evelyn's *Fumilogium*: "The hellish and dismal cloud of sea coal which is perpetually imminent over this august and opulent city, making it rather resemble the suburbs of Hell than an assembly of rational creatures and the imperial seat of our incomparable monarch."

Dr. H. R. DES VOEUX (Hon. Treasurer), in seconding the resolution, said that it was to the public the Society had to look if they were to see that the existing curse of smoke was removed from our cities. But the Society had also to look to the public's pockets, and he personally felt he could do a very great deal of good if he was allowed to put his hands deep into them. The statement of accounts showed one extremely unsatisfactory item, viz., a debit balance of 11. 17s. 9d. But that was incorrect (although he had signed them as correct), for the real deficit was something like 87l. The actual condition of affairs was that they were nearly bankrupt; and for them there was no Bank of England coming forward with a guarantee of 10s. in the pound. One of their prominent members had told them at a committee meeting that, owing to the state of its finances, the Society had no right to continue, and he had proposed a resolution that they should shut down. It was certain that the Society could not continue their campaign without assistance, and it

would be impossible to go beyond the present year without more money. It was difficult to believe that if those present gave 5l. each they would seriously miss it. He only wished that towards the end of the meeting some lady would get up and inform the audience how much the dirt of London cost her a year. In his own house he believed it was 100l. per annum. During the past twelve months the Society had been conducting experiments to determine the difference between the amount of smoke falling in London and in the country. Those experiments were not yet completed, but the difference was probably 90 per cent. It is smoke that causes the dirt of London, and if there were no smoke London would be a clean city. As matters now stood it was impossible to imagine London with all its buildings clean. And yet it might be. He wanted them to take to heart the fact that if the public did not give them money the Society would not go on next year. But they were confident, and they had made certain arrangements for next year which he had long been anxious to make, and that was for the holding during a fortnight of a large exhibition in the Agricultural Hall of smoke abatement appliances. It was important the inhabitants of London should have brought before them all that has been and is being done in this matter. If they could keep going he believed the exhibition would be the largest and best of its kind ever held.

Mr. F. J. BRODIE (Royal Meteorological Office) remarked that as a professional meteorologist of forty-two years' standing he had always taken a keen interest in the state of the atmosphere. Twenty years ago he had been successful (unhappily) in proving that during the previous two decades fog had increased very much both in density and frequency. Fifteen years later, when he had occasion to read a second paper, he was able to show that fog had decreased almost as rapidly as it had previously increased. The efforts of the Coal Smoke Abatement Society had certainly not been in vain. Assertions as to the improvement in the London atmosphere are amply borne out by the records of the Meteorological Office. For the past twenty-five years there has been a steady decrease going on. It was indeed doubtful whether London, with its proximity to the Thames, will ever be much freer from fogs than it was now, though they may become less dense and not last so long. Many of those present would remember a time when a fog lasted a week on end without any sign of a clearance. If there was less fog there ought to be more sunshine. That was borne out by a chart he had prepared showing quinquennial periods from 1885 until 1910. In 1885-90 the mean allowance of winter sunshine in London was 38 minutes per day. In the latest period it stood at 1 hour 11 minutes, or practically double. The days with fog were then 31 in number, now they stand at seventeen. In 1885-90 the mean number of hours of sunshine in the winter was 57, while from 1905 to 1910 it averaged 103 hours. For practically the entire period there has been a continuous increase in the annual amount of bright sunshine and a decrease in the amount of fog. That result was most satisfactory and it was impossible to explain it otherwise than by saying they are due in a very large measure to the work of the Society. The Coal Smoke Abatement Society had done a very good work; and all he would say to them was "Go on!"

Mr. G. BERNARD SHAW proposed the following resolution. "That this meeting, recognising the harmful effects of coal smoke on life and property, pledges itself to support the efforts of the Coal Smoke Abatement Society in diminishing the evil." He said he would like to make a few remarks of the nature of genius. The audience might say that genius had nothing to do with smoke abatement and that it was not what they had come to listen to. But he himself knew little about smoke, which was a common thing, and every thing about genius. He was in that line himself. A man of genius was not a man who saw more than other men did. On the contrary, it was very often found that he was absent minded and observed much less than other people. If you met a man of genius in Whitehall and asked him what had passed up that thoroughfare while he had been there you would probably find that he would be reduced to a condition of stuttering imbecility, but if you asked the nearest policeman, who might or might not be a man of genius, he would tell you a number of useful facts. That being so, what good was a man of genius; where does he come in? Why is it the public have such an exaggerated respect for him—after he is dead? The reason is that the man of genius understands the importance of the few things he sees. William Blake, whose genius was perhaps more beyond dispute than that of any other Englishman, saw a quite common thing, and wrote of it in language which they would probably describe as monstrously exaggerated. He wrote, in his

aries of Innocence, of a linnet in a cage which "puts Heaven in a rage." An ordinary man would never have thought of that. The ordinary man only saw a linnet in a cage, and looked on Blake's lines as one of those absurd things which men of genius say. He (Mr. Shaw) rubbed this in use he himself was always being accused of exaggeration. To the ordinary inefficient mind there is one thing which can be seen over and over again without any importance being attached to it, and that was a smoking chimney. No importance used to be attached to it until there came along an man of genius who began bombarding the local authorities with spirited drawings representing smoking chimneys—and occasionally there were details on them as to how long they had been smoking. The artist was evidently representing something. Some members of the local authorities apparently included these sketches were intended for their portfolios, and began to collect them. But it began to be apparent that the man who did these drawings believed that it was extremely important for England that smoke should be put an end to. The man was Sir William Richmond. That was the beginning of the movement, and the extent to which it would progress would depend upon the number of men of genius in the community. If anyone present would send a cheque for five guineas to the treasurer he would to that extent give that he was a man of genius. There is no use in expecting an ordinary person to do anything. The affairs of the world must be directed by men of genius. The few people who see these things will have to become centres of propaganda, and will have to back the movement up in very many ways. They must wake up the common man to things which he has hitherto taken as a matter of course.

Some time back Sir Almoth Wright delivered a scientific address in London containing a great deal of valuable matter. The Press took no notice of that valuable matter; but Sir Almoth having casually let fall a remark that he was rather sceptical of the value of washing, they read everywhere, "Distinguished physician says we should not wash ourselves." (Mr. Shaw) sympathised with Sir Almoth Wright, because they were both fellow countrymen. One has to be an Irishman to understand the antipathy and instinctive dislike that every Irishman has to washing. Anyone going to Ireland would understand the feeling. The fact of the matter was that washing was not a natural function. Sir Almoth had often remarked that some of his patients removed a considerable portion of that skin which nature intended should ward off germs, and he had suggested that we should be careful to preserve that outer layer. But in a soft climate such as Ireland's it was very disagreeable to put cold water on the skin; and as for hot water, one had only to look at the people who took hot baths to see that they were the only people who looked incurably dirty. Personally, he did not think he had really washed himself—except as regards the visible portions of his body like his face and hands—since the day when somebody else did it for him. It was true he had got into the habit of taking a cold bath; but that was not washing. He did it as a stimulant, and he often thought he would better have taken to whisky. When he first came to London one of the first things he noticed was that everybody wore gloves. Where he came from only a few wore them occasionally as a tribute to their superiority. But before he had been here many days he discovered that he must do so. According to any decent standard everyone ought to be cleaner than they are.

The real secret of healthy cleanliness was to have a clean atmosphere and clean clothes, and until they get rid of the dirt they can never have a clean atmosphere. A clean atmosphere would prolong their lives and enable them to save money. They talked about the saving in coal by preventing smoke; but there would also be an enormous saving in soap. There was no doubt about the saving; in fact, if it were possible for a commercial company to realise that particular profit for themselves the whole place would be flooded with prospectuses of new joint-stock companies for coal smoke abatement. Unfortunately it was not realisable as a commercial asset. All they could do was to rely on individuals and on public opinion. They should cut all those persons who had smoky chimneys. They should refuse their invitations to dinner, alleging as the reason: "I have seen black smoke proceeding from your kitchen chimney." Coal smoke is not like original sin, a thing they were obliged to put up with.

It was said once that dust could not be done away with on public roads. He himself had driven a motor-car amid the execrations of the populace. Now dust was almost abolished. If every motorist would now make it a point of honour to drive at a reckless speed in order to stir up any

dust there was remaining, and would also make a point of driving rapidly through a pool whenever he saw a Bishop near, those two pests, dust and mud, would soon become things of the past. And, with a similar object in view, he suggested that those who wanted to get rid of coal smoke should make a practice of carrying about a bag of soot and throwing it over people's collars and shirt fronts, in order to convince them of the evils of smoke.

Mrs. CLOUDESLEY BRERETON, in seconding the resolution, spoke on the subject from the modern woman's point of view, for the domestic chimneys as well as the factories were responsible for the smoke nuisance. Solving the soot problem would, she said, go a long way towards solving the servant problem. In flats and small houses where rent is dear the space now required for storage of the solid fuel necessary for old-fashioned kitcheners and grates could be better utilised for other purposes. The use of smokeless fuel, so far from being expensive, was, according to her own experience, both labour-saving and money-saving, and not only does it affect the pocket of the harassed housewife, but also private and public health. In her own house there was not a single coal fire, and the kitchener was heated by gas. There were three ways in which women might help in the movement: they could subscribe to the funds of the Coal Smoke Abatement Society, they might talk about it, and they might see that their own houses did not offend.

The resolution was carried.

Professor R. MELDOLA, F.R.S., proposed "That the present elected President, Vice-Presidents, Council and officers of the Coal Smoke Abatement Society be re-elected." He said he had been associated with the Society since its foundation, and he knew they could congratulate themselves upon the zeal and the efficiency of the officers and particularly upon their distinguished President, Sir William B. Richmond, who was not only the founder of the Society, but had nursed it ever since. The work carried on was by no means of a light character, and it involved a large amount of correspondence.

Mr. A. RITCHIE, J.P., seconded the resolution, and it was carried.

Mr. R. W. GRANVILLE SMITH, L.C.C., J.P., proposed a vote of thanks to the chairman, which was passed with acclamation.

Sir W. B. RICHMOND, K.C.B., R.A., having briefly acknowledged the vote of thanks, the meeting closed.

ARBITRATORS AND THEIR AWARDS.

(Continued from last week.)

THE authority of an arbitrator to determine the differences of individuals in point of law is precisely similar and governed by the same rules as any other power or authority given by one person to another. Thus, where a reference is made to several arbitrators, they must all join in making the award.

Where the reference is to three arbitrators, enabling them or any two of them to hear the case and make their award, although two have jurisdiction over the case, yet they only have jurisdiction in conjunction with the third, and where he has had notice so that he might have attended the meetings and participated in the proceedings if he so determined, under such reference the Courts would undoubtedly set aside an award made by two out of three arbitrators. In one case where there was a reference to three arbitrators, and it was provided that any two of whom might make the award, and one of the three declined during the hearing to have anything more to do with the matter, whereupon a draft award was prepared by the other two and sent to the third arbitrator, who stated his objections thereto, the other two arbitrators subsequently executed an award differing from the draft award so previously sent to the third, without again submitting the amended draft to or consulting the other arbitrator, the Court decided the award was bad, as the third arbitrator should have been consulted on the final form of the award before it was agreed on.

Where there are three arbitrators with power for any two to make an award, although an award made by two is good, yet it must be the result of the judgment by these two; thus where on a reference to three arbitrators, two of whom were laymen, the third a legal arbitrator, with power for any two to make an award, the two lay arbitrators agreed to be bound by the decision of the legal arbitrator on a point of law, which he decided, and one of the lay arbitrators and the legal arbitrator signed the award, the Court set it aside as being a

delegation of the question of law by two to the third arbitrator.

Any reservation of future power by the arbitrators in their award, if it affect the whole of the justice of the thing awarded, would render the award totally void, as, if the arbitrator reserves to himself the power of settling a security or of appointing counsel to settle a conveyance, or the power of explaining any doubt that may arise on the meaning of any part of the award, or the power of altering a part, or the whole of the award, this would be such a reservation of the arbitrator's power as would render the whole award void.

A delegation of authority by an arbitrator to a third person has been always held to be void: thus, if an arbitrator ordered that the parties shall stand by the award of a third person, the award would be bad. An arbitrator may delegate his power over a ministerial, but not over a judicial act. It is not easy to say what is to be considered a judicial and what a ministerial act. I can, however, give an instance when it was decided that an award was good, which directed that one of the parties should pay a certain sum of money to the other for every acre, to be measured by an able measurer, in the presence of the arbitrators, at the rate of so many yards to the pole; for this is only a ministerial act, to ascertain the quantity of the land. On the other hand, in a case where the questions on what terms a lease was to be renewed was referred, it was decided that an award directing one party to put the premises in repair to the satisfaction of a certain surveyor was void, as being a delegation of the authority of the arbitrators. In some early cases, where it was awarded that the manner in which a legal part of the award should be carried into effect should be according to the advice of counsel, the awards were held good. An award of costs to be settled by a stranger would be clearly void, as being a judicial act. It was decided by Lord Hardwicke that an award, amongst other things, of a release, the form of which was to be settled by one of the Masters of the Court, in case the Court should be pleased to give directions for that purpose, was good; and his lordship is reported to have said upon that occasion that "to lay it down as a general rule that arbitrators must particularly point out the method in which their award should be carried into execution would be too nice, and such a rule would overturn a great number of awards."

It has been said that an arbitrator is liable to an action if he misconduct himself, but I cannot find any case in which such an action has ever been brought. In two cases, at different times, it was decreed in equity that an arbitrator should pay costs where he had declared he would make one party pay the costs, in one of which cases one arbitrator said he would consider and judge on plain facts, and the other said "he should not mind facts; that, being convinced that one party has misused the other, and having it now in his power, he would mulct his representatives." The Lord Chancellor highly approving of a former precedent (where the arbitrator having been made defendant to a bill in equity, Lord Macclesfield had inverted the arbitrator's threat and decreed that he should pay costs) made a similar decree. The Courts, however, will always be disposed to view an arbitrator's conduct in the most favourable light, and unless a clear case of corruption and partiality be made out against him, there is no liability on his part for negligence or incompetence. Where money was deposited by a bankrupt, before he committed an act of bankruptcy, in the hands of an arbitrator, who was to decide to whom it belonged, the arbitrator, before the commission issued, and after an act of bankruptcy but without knowledge thereof, paid the money over to the person whom he thought entitled to it, it was held that the trustee in bankruptcy was not entitled to recover it from the arbitrator.

An arbitrator may be called as a witness to prove facts which occurred or came under his cognisance during the reference. He, however, cannot be admitted or called on to give evidence of any concessions made by one party during the reference for making his peace, although as to proving regular admissions by the parties there is no objection to his testimony.

In my opinion, the capability of an arbitrator and the most important part of his work is to draw up and publish his award.

The award is the judgment of the arbitrator, and it is in its preparation that the arbitrator most frequently fails. To prepare an effective award requires a great deal of consideration and not a little technical and legal training.

The object of the arbitrator should be to settle the disputes between the disputants who have referred the questions to the arbitrator for the very purpose of avoiding litigation,

but if the arbitrator issues a badly drawn award, instead of putting an end to litigation he will in all probability commencing it and, usually, in a more aggravated form.

We assume this afternoon that the arbitrator has been properly appointed, has conducted the arbitration in accordance with the necessary legal forms. Those of you who have taken an interest in the publications of your Institute will have received a copy of my lecture on "Arbitration Procedure," which I delivered to your Institute last November when I was unable to deal with awards fully on account of the limited time at my disposal.

The arbitrator will have clearly before him the definite questions which he has to decide by means of written statements prepared by the respective parties. He will have the evidence he has taken of the witnesses called before him and will have taken notes of all arguments and questions which have been submitted to him by both sides relative to the matters to be decided, and will have made full notes of any legal question which has been discussed and which he has to decide.

How is he to set about the preparation of this documentary decision?

He will, of course, know and bear in mind that his award can be brought before the Court and that the Court has power to set aside a bad award or to remit it to him for reconsideration, and he will also in the interest of the parties remember that such a proceeding will undoubtedly cause litigation and expense. Therefore, the first thing he must know is on what grounds the Court will set aside or remit the award. If a layman refers to the Arbitration Act, he will find that the statute provides that, where an arbitrator has misconducted himself or an award has been improperly procured, the Court may remove the arbitrator or set aside his award or remit the same to him.

That may seem quite plain, but the arbitrator must know how he can misconduct himself, because that is the word used and it has a meaning far wider than the average man might expect. The Courts look upon misconduct as everything which will legally make the award bad. For instance, if the arbitrator proceeded with the arbitration in the absence of one of the parties without giving clear notice of his intention of so doing, if he decided contrary to law, if he published his award before either party has had an opportunity of submitting his whole case, if he failed to decide all the questions submitted to him, if he examined a witness privately in the absence of the opponent, if he refuses to state a case for the opinion of the Court where a proper application had been made and refused to delay his award until an application could be made to the Court to compel him to state a case, if he refuses to adjourn a meeting to give one of the parties time to instruct counsel where the other side appeared by counsel and in numerous other cases.

The award itself, to bind the parties, must be

- A. (1) Certain.
- (2) Mutual.
- (3) Final.
- (4) Consistent.
- B. The thing awarded must not be
- (5) Unreasonable.
- (6) Illegal.
- (7) Impossible.

But I must mention in passing that a defect in some of these requisites does not necessarily make the whole award bad; it may only be bad in part if the good and bad parts can be clearly separated without injustice to either party, as we shall see later on.

In the early cases the construction of awards by the Court was subtle and difficult to reconcile, but of late years the Courts have been more consistent and reasonable in their decisions, and we may take it that there are certain general rules which guide the Courts in constructing awards.

Firstly, the Court assumes that all questions submitted to the arbitrator have been settled by him and are covered by the award.

Secondly, that he has not exceeded his authority, but if the parties have submitted definite questions to him and requested definite answers, a general award would hardly be held to be sufficient.

Thirdly, the Court will hold that an award comprising anything beyond the submission is void, at least certainly for that part.

Fourthly, an award directing a stranger to the submission to do a certain thing would be construed as bad unless a party to the submission had agreed to obtain the performance of

act, in which case the party so undertaking might be able to an action for the non-performance of the award.

A short time ago I mentioned a list of requirements. Let us consider each point very shortly.

As to the question of certainty—

If there be an ambiguity in the words used in the award the Court will place upon them such construction as will best coincide with the apparent intention of the arbitrator, and the Courts will restrain general terms in an award to apply to particular words in the submission; they will connect the particular thing awarded with the general words of the submission.

The power and authority of an arbitrator is derived entirely from the submission; he must therefore make his award strictly in pursuance and in conformity with the submission. He must not, in his award, go beyond the submission in things, in person, or in time, nor exceed the power given to him by the submission in the particular case. And an arbitrator must make his award of all things submitted to him.

It is a general rule that unless the arbitrator makes his award of all matters submitted to him the award is entirely void. Where the submission is of several specific questions, if it does not appear that the arbitrator has made his award of each matter submitted to him, the award is void. The defect in these cases, and in others of the same kind, would be apparent on the face of the award; consequently the award would be set aside on motion, or the defect would be an answer to an action on the award. But where the submission is of all matters in difference, or of all disputes, without specifying them, the arbitrator need only make his award of such things whereof he has notice; if there be other things in controversy not included in the award, but of which the arbitrator had not notice, the award is good. If, however, the arbitrator does not make his award of all matters within the submission, of which he has notice, the award is void in toto. And on proving to the Court that such matters were laid before the arbitrator, and not included in the award, the Court would undoubtedly set aside the award on motion. But it must clearly be proved the arbitrator did not take such claim into consideration, and include it in his award.

Thus, where a cause and all matters in difference was referred, and the award disposed of the cause, in order to impeach the award, it was decided that the parties must show that there are other matters in difference, and also that the arbitrator had not taken them into consideration before the award would be set aside.

Nevertheless, every award to be binding must be certain, for the object of the parties in submitting their disputes to arbitration is to make an end of litigation; if the award were uncertain, instead of putting an end to litigation, it would be only a fresh source of dispute between the parties, but the uncertainty to invalidate the award must expressly appear on the face of the award.

An award that directs the payment of money generally is sufficient without assigning a time and place for that purpose.

A general distinction prevails between an award of an act to be done by a stranger, and an award of an act (as the payment of money) to be performed to a stranger: in the latter case the award would be good, if the award showed that the money to be paid, or the act to be done to the stranger were for the use or benefit of one party, as if it appeared in the award that the stranger, to whom the money is to be paid, is a trustee for one of the parties, or that the money is to be paid to the stranger for the use or benefit of one of the parties.

Where it is referred to an arbitrator to ascertain facts for the purpose of raising a question of law, such questions should be set out clearly and with certainty. An arbitrator who finds facts to raise a question of law should find them with such certainty that the Court may draw their conclusion of law; he should not leave any fact to be ascertained by the Court.

Everything will be construed to make an award certain. Where the arbitrator finds the rule by which the money which he awards to be paid is to be assessed, but does not assess the amount, the award is perfectly good and certain, for the amount, after the rule of calculation is ascertained, is only a matter of addition or subtraction. Where an arbitrator awarded interest from "the last settlement," which date was not a matter in dispute, the Court held the award sufficient certain.

(To be concluded.)

THE WORSHIPFUL COMPANY OF PLUMBERS.

THE delegates from the United Operative Plumbers' Association of Great Britain and Ireland, representing about 200 cities and towns, were received at the Guildhall by the Lord Mayor, the Master of the Worshipful Company of Plumbers.

In welcoming the delegates the Lord Mayor referred to the cordial co-operation of the representatives of the plumbing trade with the Company in fostering the education and training of plumbers in connection with the movement for the National Registration of Plumbers.

Mr. Robert Bogan, representing the Labour Exchanges Department of the Board of Trade, attended the meeting. Mr. W. D. Coröe, architect to the Ecclesiastical Commissioners, and Past Master of the Plumbers' Company, took the chair on the Lord Mayor leaving to attend an official engagement. The delegates discussed various matters relating to the working of the plumbers' classes in various districts and the working of the Labour Exchanges Act in connection with the joint memorandum of the President of the Board of Trade and the President of the Board of Education making provision for co-operation between Labour Exchanges and local education authorities.

Delegates expressed the opinion that by the addition of representation of plumbers on the central and local Advisory Committees the technical training of lads entering the plumbing trade and the employment of qualified men might be better regulated. Mr. Bogan undertook to represent these views to the Department.

On the motion of the Manchester delegate it was resolved:—

(a) "That the principle of apprenticeship for plumbers, combined with sound technical education, should be systematically advocated and adopted in connection with the National Registration of Plumbers."

(b) "That the education authorities of the kingdom should recognise the value of this principle as necessary to sound industrial training, and should provide facilities for the further extension of plumbing classes in all centres where the plumbers of the locality are prepared to co-operate with the authorities in securing a sufficient number of student plumbers working at the trade and dealing with other practical questions to ensure the successful working of the classes."

(c) "That the Board of Education should duly recognise these classes for the purpose of grants made by the Board, and the Board should further recognise in connection with these classes such examinations as may be prescribed by the central body for the National Registration of Plumbers and approved by the Board."

(d) "That the local health and water authorities and architects should co-operate, as far as possible, with the local plumbers in furthering the work of the District Councils for the National Registration of Plumbers, especially in setting up and maintaining a sound standard of work executed by plumbers."

The system of marking the work of registered plumbers with a distinguished mark was discussed at length. On the motion of the Oldham delegate, seconded by the Cambridge delegate, it was resolved:—

"That the delegates of the United Operative Plumbers' Association of Great Britain and Ireland heartily approve the principle of marking the work of registered plumbers when it complies with the standard of efficiency required by the regulations of the Plumbers' Company and the Board of Trade, and the meeting recommends it to the sympathetic consideration of the members of the Association in their respective localities."

AMERICAN ARCHITECTURE.

By FRANK M. ANDREWS.

(Concluded from last week.)

THE system, as developed, is a simple one in principle, consisting of supporting columns of steel or cast-iron, braced in all directions and riveted or bolted to the horizontal girders and beams, which not only support the floor construction but, more important still, also carry, storey by storey, the outer walls of the structure, which thus cease to have constructive value, becoming a thin screen of material that serves to enclose the building and to protect the steel fabric from exposure.

The outer walls being but screens, the masonry supporting nothing, their piers were in consequence easily reducible to a minimum surface width, and the area of glass could thus be largely increased, thereby giving a maximum lighting to the interior, a device rendered necessary by the generally increased height of our buildings fronting upon streets that could not be increased in width. The effect of this condition is manifest in the earlier treatment of the architectural design of these structures, and has become typical of them in the work of the present day.

The walls, being non-supporting, could be reduced to a minimum thickness, thus providing an important addition to the interior area of each floor, and materially increasing the earning power of the building; an imperative necessity because of the rapid rise in ground value in central business districts.

None of this development would have been possible, however, if it had not been for the American type of elevator, which was promptly developed in response to this new demand, and has kept pace with it ever since by evolving new principles of construction and operation necessary to cope with the constantly-increasing height of buildings and the enormous increase in service, both as to speed and volume of traffic.

These foregoing advantages, meeting our conditions and requirements, led to the general widespread adoption of this system, resulting in the development of remarkable contracting and building skill and organisation, of which we have every right to be proud, and which has produced amazing results as to speed of construction, quality of work, and economy. With our high ground values and the necessarily great earning power of these structures, the saving of time in their erection became a matter of momentous importance, and this necessity led to the creation of the skill and organisation referred to.

This type has come to stay because of its attributes of structural endurance, safety, economy in first cost and of upkeep, and its general suitability to our modern conditions.

While it has belonged to the domain of the architect, becoming the accepted type for our huge hotels, apartment houses, and commercial structures, and under his direction is fast becoming a thing of grace and beauty from a beginning of sprawling ugliness, nevertheless it must be said in all fairness that these structures could not have been devised without the skill and genius of our mechanical and structural engineering professions, the builders and the skilled mechanics, whose trades have become specialised and developed by this demand, all united in effective co-operation with the architect.

The question is frequently propounded: "Are these structures beautiful, or can they be made so, and thus enter the realm of artistic thought?" In my opinion, the answer is emphatically yes. It is no conclusive argument to decry them because in certain communities people live and pursue their vocations in such a manner as to make this type of building unnecessary, or because, since they have thereby been enabled to restrict the height of all buildings to a lower level, producing a uniformity of general effect, they can then point to Paris as the grand example of this sort of thing, and claim her artistic virtue as their own. Beauty of this sort is the outgrowth of suitability to local conditions, plus the artistic thought that may be apparent in the means adopted, but it is, after all, only one kind of beauty. There is beyond question the beauty to be found in truthful picturesqueness, when it is a natural outgrowth of conditions inherent to the people, and it can be made quite as respectful of architectural law, and the result of individual effort being made to regard the effect of the whole, while working in this freedom of spirit, as though it were hemmed in by ironclad restrictions as to height, &c., that are characteristic of certain communities.

The development of the exterior treatment of the tall building, architecturally, has been exceedingly interesting, and in the time and space afforded to me in this discussion cannot be described in detail. The stereoptical views and the comment thereon, which I have to present, will illustrate the subject in a more effective manner.

Briefly stated, our fundamental principle in design seems to have become established by treating the tall structure as a column with its base, shaft, and capital. In all of the best and most pleasing examples of the later work this element appears, and we find the lower storeys grouped in a single architectural composition supporting a long vertical and shaft-like series of storeys grouped into a simple treatment that carries the eye upward without interruption

to the crowning feature of the entire design, which again is a series of storeys combined into the capital, as it were, of the mass. The pleasing variety of thought in the handling of this scheme of treatment is one of the best features, and, generally speaking, is now characterised by a sober refined self-control and a truly architectural spirit. In the Classic feeling of the Italian Renaissance the municipal building of New York is unquestionably one of the best solutions of the problem on these lines that we have, while in the West Street building and in the Woolworth building, both in New York, we have equally good examples of the application of Gothic feeling and detail. Considering its extraordinary height and unusual mass, the design of the Woolworth building is, in my judgment, an architectural achievement of the highest order. I have referred to these buildings not only because of their architectural merit, but also for the reason that they represent the two broad schools of design which seem most suitable to the problem presented by the tall building, and are, I believe, typically representative of our lines of future development.

In pointing out the consummation of this century and a half of architectural growth in my country, I would have you enter the harbour of the city of New York on a trans-Atlantic liner, and from that point of view for the first time observe the buildings of the lower end of Manhattan Island with their towering and amazing sky-line and mountain-like mass of architectural grouping, picturesquely artistic and truthfully expressive of the spirit of our lives and activities.

I believe that it will grip the imagination of any observer, whether he sees it for the first or the hundredth time, and that he will experience from it that flow of thought and impression which is produced only in the presence of some great and inspiring thing. To me it illustrates the quality and the character of our people, their aspirations, and their peculiar genius in terms of architecture, as do our mountains and valleys, our lakes and rivers, the physical character of our land. Prosperity, wealth, and power we are surely possessed of, and we are as surely acquiring from the artistic wisdom and traditions of Europe that which is useful and good for us to have, and are applying it intelligently to our needs. As a people we are learning to respect and revere Art, and to value its uplifting influence, and with these fundamentals to build upon, and with the artistic forces that are ever active amongst us, the future of American architecture will be worthy of high regard.

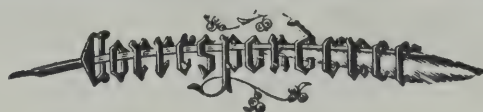
At the conclusion of Mr. Andrews's paper Sir ASTON WEBB, C.B., C.V.O., R.A., Vice-President of the Society, proposed the vote of thanks from the chair, and said that they had had an absorbingly interesting paper on American architecture. It seemed wonderful to think that in 1873-4 Americans were still without any manner of their own, or any decided leanings in architectural design. In the last forty years they had developed the wonderful work about which they had just heard and which had been extensively illustrated on the screen. When he had come to the meeting he did so thinking he knew something about American architecture; but he now found he was altogether out of date as three or four years had elapsed since his visit. The tall buildings of that date had been eclipsed, and the 700 feet structures had been erected since then. He was bound to say that he did not think that Americans themselves were quite sure as to the possible final success of these buildings, and they were always asking Europeans what they really thought of them. Personally he never had the least hesitation in replying he thought them extremely fine; but he often believed that those to whom he said it thought he was chaffing. The effect of the buildings on him was very strong; and when the streets were fuller of them the effect would be better still. When he was there the tall buildings were only occasional, and the effect was a little "jumpy." To look down the streets of New York then reminded one of the streets of Genoa and of many other old Italian towns. The New York streets were wider; but the higher buildings and the great overhanging cornices gave very much the same effect of deep shadow at the bottom and brilliant light at the top. But he did not think our admiration for them would ever lead English architects to imitate them here, where the atmosphere and requirements were so different. The public in America took the keenest interest in architecture and architectural problems. Over here the public take no interest in such matters. The reason for this difference was that Americans had a new problem to solve, while here the problems had been solved most excellently in days gone by and we were nervous about starting new ones. In America architecture was a topic of

conversation and of general interest. That was a great encouragement to the artists working in brick and stone—an advantage which English architects envied them and which they congratulated them upon possessing. Another advantage was the unified action in that country. There all were working on the same lines, though not necessarily in the same style; but the buildings were so huge the detail on them was a comparatively small matter. The buildings were designed for great effect; a great base, a great shaft, and a great cap. But each architect was trying to produce the same effect in his individual way. A similar sort of co-operation was found in all the great traditions of the past. Whenever a people were working together on the same lines and with the same aims success followed. This showed that architecture was an associated art, and that a Copyright Bill was scarcely necessary. What architects required was to work together and to assist one another in developing something which should be not only satisfactory to themselves, but should bring honour and repute to the countries in which those buildings were erected. The history of America was now being very largely, nobly, and grandly built by American architects. He (Sir Aston Webb) had the great pleasure of knowing Mr. MacKim, one of the most charming, modest, and refined men who ever stepped. At the time of his visit that architect had just completed the library attached to Mr. Pierpont Morgan's residence. A New York City man had told him that he often went out of his way for the pleasure of going down the street and enjoying the elevation of that library.

Mr. H. H. STATHAM, F.R.I.B.A., in supporting the vote of thanks, said he had received a very new light upon the actual conditions of American architecture. His feeling about the buildings was to admire them in a sense as being the natural outcome of the conditions. But it was impossible not to feel a certain dissatisfaction with the idea that they were buildings of which the whole exterior more or less imitated a construction which was not the real construction of the interior. There should be some effort made to design the exterior so that it actually conveyed the idea that it was only a skin and not a solid stone structure. He wondered if it was possible to carry out these buildings in concrete-steel, so that the exterior represented the actual construction. To Europeans, accustomed to regard architecture as buildings in stone and brick, that idea of an outer skin went against one's prejudices. His feeling with regard to many of the buildings was that the base was not strong enough (architecturally speaking) for the immense structure above it. Probably there was also the question of light; but if the architects could manage to have large piers in the basement it would have a better effect. Finally, he was rather inclined to think that American architects had given themselves too much to the Ecole des Beaux-Arts. They might have tried to evolve a style of their own.

Mr. JOHN SLATER, F.R.I.B.A., mentioned that three years ago he had had the pleasure of going to New York, and he had felt the imposing effect mentioned of the high buildings when seen from the river. The facts that the gaps between them were now being filled up was a good feature, because to stand in one of the narrow streets and look over a low building at the side of one of the lofty structures was one of the most depressing things which could be imagined. He could not help saying that in the purely utilitarian structures not sufficient attempt was made to emphasise the corners. In one building it was positively alarming to look at the thinness of its corners. If these structures had to be put up it might be possible to give a greater apparent strength to the corners. It was interesting to hear about the stimulus towards artistic appreciation coming from the artist to the people. There could be no doubt from what was known about the spread of architectural education in the States, and the way in which the various colleges and municipalities were providing for the education of art students, that the intelligent appreciation of architecture was greater in the States than here. That was a matter upon which the Americans were to be congratulated, while we in this country must deplore the lack of it for ourselves.

Mr. FRANK M. ANDREWS, in reply, said he hoped that the paper would help them whenever they saw work from the United States to understand what it was, with all its faults and virtues. He would not wish to see any of those high buildings in any part of Europe, because they would be an entire misfit. But they belonged to America, and were not freaks there. The freakishness would be eliminated from them by educating the landlord and the public. The time might come when they would not have to carry a thirty-storey building on sheet glass.



[The Editor will not be responsible for the opinions expressed by Correspondents.]

The King Edward National Memorial.

SIR,—As a member of the King Edward National Memorial Council, which has for its object the saving of the Crystal Palace to the nation and Empire for ever, and particularly in view of the fact that the Palace is for sale at the Receiver's hands, and otherwise might suffer an unfortunate end or become a standing disgrace to our national pride, I wish to make an appeal to my fellow Freemasons to support the excellent scheme known as the King Edward National Memorial, and thus help to save the Palace and its grounds as a fine centre for recreation, amusement, and education, and to enable us by our adoption of business-like and up-to-date methods to transform the Palace failure into a creditable success.

If each Freemason will send something the result is assured.

The Council are giving a free life admission ticket to the Crystal Palace to every contributor of one guinea, whilst a contribution of 1,000*l.* entitles the donor to vote in the appointment of managers. Full particulars may be obtained from, and cheques, crossed "Lloyds Bank, St. James's Branch," should be addressed to the Right Hon. the Earl of Kinnoull, D.L., the King Edward National Memorial Offices, 26 Shaftesbury Avenue, W., or may be paid into almost any bank throughout the country, some thousands of which are receiving subscriptions.—Yours faithfully,

June 7, 1911.

W. P. TRELOAR.

Coronation Celebrations and Fire Precautions.

SIR,—The danger of fire in connection with the impending Coronation celebrations, as far as the public are concerned, are considered by this Committee to be so grave, largely on account of the growing habit of cigarette smoking, carelessness with matches, and the use of highly inflammable materials in garments that the following notice is being issued by this Committee to-morrow regarding fire precautions, and we would very highly esteem it as being in the public interest if you could find space to publish the notice in question, which also includes some hints as to safeguards for the stands, decorations, illuminations, fireworks, &c.

Any possible efforts to impress on the readers of your widely-read journal the necessity of simple precautionary measures will, in the opinion of this Committee, materially reduce the risk of loss of life or injury from fire.—Yours truly,

For the British Fire Prevention Committee,
EDWIN O. SACHS, Chairman.

June 9, 1911.

FIRE PRECAUTIONS ON JUNE 22, 23, AND 29.

A.—Matches, Smoking, and Wearing Apparel.

1. The lighting of matches and smoking should be avoided by persons standing or moving in a crowd, and should be prohibited by owners of stands, balconies, &c.
2. The wearing of garments of muslin, voile, and flannelette should be avoided, and celluloid articles should on no account be worn.

B.—Decorations, Stands, Balconies, &c.

1. The use of highly inflammable decorative materials such as paper roses, muslin, cotton wool borders, unless properly treated, and celluloid decorations should also be avoided.
2. Exits and stairs should be kept clear for all stands, balconies, rooms, &c., used as points of vantage, and buckets of water in good number, thick cloths, portable steps and knives for cutting down draperies should be at hand.

C.—Illuminations, Fireworks, &c.

1. Illumination devices must be fixed firmly with metal fastenings, *i.e.* not with string or cord and on no account placed on window ledges, balcony rails, or the like, overlooking public thoroughfares without being properly secured.
2. Curtains, hangings, &c., should be removed from around windows where open lights are to be used and away from temporary wiring, fuse boxes, &c.
3. Buckets of water should be provided, also boxes of dry sand where electrical illuminations are employed.

4. Fireworks, especially rockets, should on no account be let off from property adjacent to thoroughfares, and where used should be handled by adults of some experience.

For the British Fire Prevention Committee,
EDWIN O. SACHS, Chairman.
ELLIS MARSLAND, Gen. Hon. Secretary.

Building Stones.

SIR,—May I be allowed through the medium of your columns to draw the attention of those interested in the supply, use, and preservation of building stones to the efforts of an International Committee to collect information in order to determine the various causes producing decay in stone, more particularly the effect of mortar as influencing deterioration?

The committee, which is composed of members of the International Association for Testing Materials, and the labours of which are officially recognised by the Royal Institute of British Architects, held a meeting last October, under the presidency of Professor van der Kloes, and made some careful investigations of the stonework of many important buildings, including Cologne Cathedral, under the guidance of its architect, in Holland and Germany. As a result of this meeting a series of questions has been circulated among those interested with the object of collecting such information as may lead to a proper understanding of the problems connected with the decay of stone under varying conditions.

Many of your readers must possess information gained by experience which would be of great value to the committee, and I venture, through your courtesy, to appeal to them to give any particulars which may be at their disposal or to preserve the list of questions appended, with a view to the possibility of future assistance.

It is only by the collection and subsequent digestion of a great number of facts that satisfactory theories can be formulated, and without private assistance in a matter of this kind it is almost impossible to get the requisite information, which is necessarily largely in private hands. I may add that the response to a similar appeal abroad has been very encouraging.

The following are the questions, to which answers, even of a fragmentary nature, will be of value:—

1. Nature of building.
2. Situation (e.g. address, nature of surroundings, aspect).
3. Material (e.g. kind of stone or brick).
4. Date of building (or part under discussion).
5. Mortar used (e.g. composition, proportion of sand, analysis, or means of obtaining the same).
6. Nature of defect (e.g. incrustation, surface scaling, efflorescence, loosening, bulging of half-brick thickness).
7. Suggested cause (e.g. percolation of water, frost, defective stone, brick or mortar, old bond timbers, smoky atmosphere, action of sea water).

Any details (which will be treated as confidential if so desired) should be sent to the President of the Committee, who has long been an enthusiastic worker for the benefit of stone users, Professor A. J. van der Kloes, Delft, Holland, to me, or, with your permission, to you, Sir, for publication.

ALAN E. MUNBY,

Hon. Sec. R.I.B.A. Sci. Com.

Old-Time "Travellers' Rests."

SIR,—The "travellers' rests," at one time to be met with in many parts of the country, are fast disappearing, as the need for them has disappeared long since. Some of these rests were rough slabs of wood or stone—there is one such now standing a few miles this side of Reading at the junction of three turnings. It bears the inscription:—"Rest and be thankful"; but, given fine weather, the bank at the opposite side of the road would be a far more luxurious couch. Others are more pretentious, as, for instance, the one on the road between Worthing and Arundel. This structure stands in a turning off the main road, and might not be noticed by a passing traveller. The writer discovered it when he sought shelter from the rain under some near-by trees. It consists of a small round wooden house with an umbrella-shaped roof, which, however, is not now waterproof. A seat runs round three sides of the building, which might accommodate eight or nine persons at a pinch. It is evidently the work of a skilled craftsman. On one side of the wall is an inscription, but it is now undecipherable. Some of these old structures have been removed by local authorities and preserved as mementoes of a past that was very different from our present hurrying age; others have disappeared under the continued

effects of wind and rain, whilst others, where they fell into decay, have been taken away piecemeal at a time by villagers to be used as firewood. The vandal with the pocket-knife has not been idle on his visits to the rest on the Worthing road, and the seat is criss-crossed with initials and dates.—Yours, &c.,

WAYFARE.

The Passing of the Jerry Builder.

SIR,—In your issue of June 9 a writer, under the *nom de plume* of "A Dweller for 25 years in Jerry-built Houses," takes the profession to task for not providing the general public with houses costing from 375l. to 500l. Might I remind him that an architect is not a speculative builder, does not design houses on a speculative basis, and would only do so on request by a client? He further suggests that a year or two back it would have been impossible to find an architect willing to carry out such an undertaking. This is absolutely incorrect. I, personally, and many others, would have been only too glad to have received such commissions daily. The impression is quite an incorrect one, as although I admit the work is not the most remunerative, yet the small plums are sweet, and an architect never can tell how and where the important building may not follow the small commission. At any rate, this is my own personal experience. The small client of to-day may become the large and important one of to-morrow. The gentleman of 25 years' experience might by now have been the proud owner of several houses, in preference to renting a place, not one brick of which presumably is his own. For the obvious reason that I do not desire to be thought as advertising myself, I refrain from signing my name, but enclose my card.—Believe me, yours very truly,

A.R.I.B.A.

SIR,—I think your correspondent signing himself "A Dweller for 25 Years in Jerry-built Houses" is quite wrong in calling architects to account and blaming them for the shortcomings of the inferior and cheap dwellings which existed until the present happy new state of architectural education which middle-class tenants are learning to so much appreciate. To say that architects would not have been willing to design a small house twenty-five years ago is absurd. I can quote from my own experience. My father was an architect, and, I know, thirty years ago he designed numbers of small houses. I do not say they were often the style of the present modern bungalows or cottages now so much sought after, but rows of small houses and terraces on new estates, which had been used for orchards and agricultural purposes, &c. Nor was he asked to superintend the building of them; he was simply asked for designs and plans, and it happened that when he died I lived in one of these small houses myself with my family. I know he would have been only too pleased to have gone on designing these small houses, as well as large ones. He was very frequently asked to advise as to the best materials to be used in the building, which advice he always gave gratuitously. Your correspondent seems to forget that, if the architect had more often been allowed to superintend the erection of these small houses of his own design, no cause would probably have arisen to speak slightly, as so often is done, of the "jerry builder."—I am, Sir, yours faithfully,

AN ARCHITECT'S SON.

SIR,—Your correspondent does well and justly in his excuse for the existence of the much-abused "jerry builder," who is but the natural outcome of those who want a shilling's worth of work for sixpence, and then, when too late, find that "what costs nothing is worth nothing." He is hardly, perhaps, quite as just to the architect. Many years of experience tell me that he has rarely in the past been invited to do what the change in public sentiment now craves of him. Had such been the case, he would have been only too glad to respond to the call.

From my personal knowledge as a designer of many houses, both small and large, I have again and again been assured that the house-hunter has hitherto preferred "a brick box with a slate lid" to a homely house, and, with good models, both old and new, about him, has never appeared wishful to imitate them in plan or convenience, and still less in their quiet æsthetic tuition. If we poor architects never before did such things it was simply and solely because we never had the chance, especially among those who preferred shams to realities. To pay rent for a room rarely if ever used (or in some cases usable) seems to be the acme of folly, but it has taken some time to find it out.—Yours faithfully,

E. SWINFEN-HARRIS, F.R.I.B.A.

June 9, 1911.





Photo by A. E. WALSHAM, 60 Doughty Street, W.C.

OXFORD COLLEGE SERIES. No. 114.—ARCHWAY ENTRANCE TO BOTANICAL GARDENS.

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THE RADIUM INSTITUTE, LONDON.

Mr. F. P. FIGGIS, F.R.I.B.A., Architect.

The Architect, June 16th 1911.



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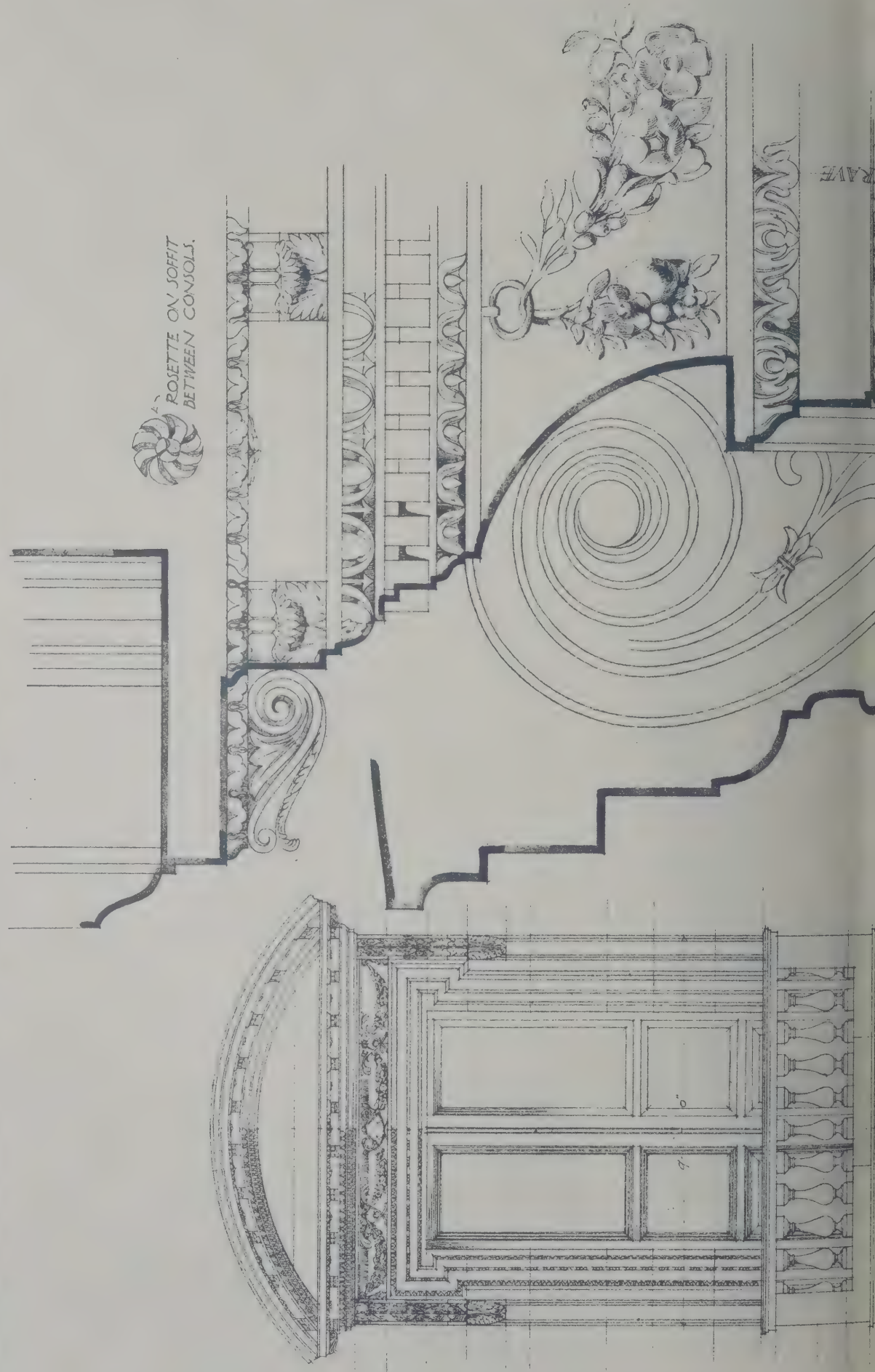
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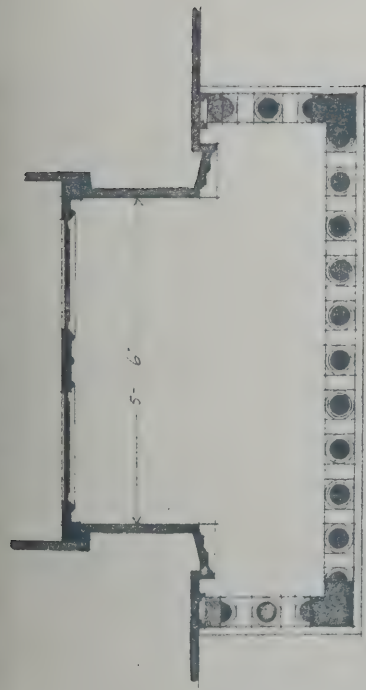
OFFICES OF THE ANGLO-AMERICAN OIL COMPANY, QUEEN ANNE'S GATE, LONDON.

Messrs. ERNEST RUNTZ & SON, Architects.

THE OLD ASHMOLLEAN MUSEUM, OXFORD. DETAILS OF NORTH WINDOW.

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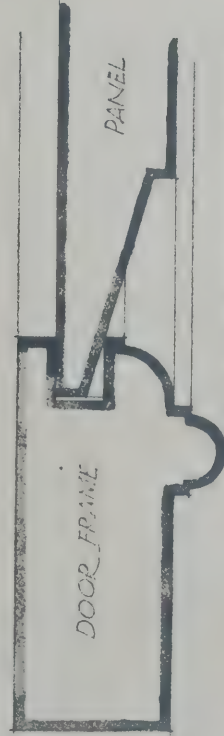




PLAN



PLAN THRO' UPPER PANEL



PLAN THRO' LOWER PANEL
OF DOOR

SECTION THRO'
PEDIMENT

Joint 2

SECTION THRO'
BALLUSTERS

The Architect.

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FORTHCOMING EVENTS.

Monday, June 26.
Royal Institute of British Architects: Presentation of the Royal Gold Medal, at 8.30. "The Interleaved Heirloom Copy of the <i>Parentalia</i> , and some Notes on the Wrens," by Lawrence Weaver, F.S.A., Hon. A. Exhibition of Photographs of Wren's work.
Tuesday, June 27.
Incorporated Municipal Electrical Association: Annual Meeting at Brighton, June 27—30.
Wednesday, June 28.
Institution of Civil Engineers: Conference on the "Education and Training of Engineers."
Thursday, June 29.
Royal Institute of British Architects: Final and Special Examinations, June 29—July 7.
Institution of Civil Engineers' Annual Conversazione at the Royal Albert Hall.

ARCHITECTURE AT THE ROYAL ACADEMY.—II.

Of the architect-Associates of the Royal Academy, Mr. REGINALD BLOMFIELD is represented by two drawings only. No. 1649 is a "Bird's-eye view of new gardens, from house to canal, Mellerstain, N.B." This shows a succession of sunk gardens with raised terrace walks around, rising as the ground rises from the canal to the house, thus affording opportunity for the designing of steps from one level to another with architectural adjuncts. This is quite the right treatment of a formal garden, which loses much of its effect if its plan cannot to some extent be seen from a higher level. Pattern-planning of gardens as in towns is very much of an absurdity when everything is on a dead level. If the pattern can be seen, well and good; but if not, then the designer's efforts should surely be directed to the vistas. No. 1667, Mr. BLOMFIELD's other drawing, shows Sidney College, as ordered to form the Holbourne Gallery, Bath, and is reminiscent of JOHN WOOD, with whom Mr. BLOMFIELD is probably more closely in sympathy than any other architect of the day. How much is alteration and how much original the drawing does not express, so completely does the new blend with the old.

Mr. ERNEST GEORGE has three drawings in the Architectural Room. No. 1515 shows the interior of "The Concert Hall, Royal Academy of Music," looking towards the platform and organ with orchestra seats around. We should hardly venture on such a ceiling as is shown, with a high pitched ellipse rising from a deep cove, the top of the ellipse pierced with what seem like high light wells, and the cove intersected by circular groins. We hope this will be all right for orchestral concerts, but we doubt if solo singers will be pleased. No. 1516 is "No. 17 Grafton Street" for Messrs. BARRARD, which has an ornate doorway with ornamental window over, the remainder very simply treated. In the drawing the proportions of the doorway seem uncomfortable. No. 1529 is a drawing showing "The Ombrium of the Crematorium, Golder's Green," in external perspective and a sectional perspective of the prior of a square tower treated in a quasi-Romanesque manner. Altogether we cannot say that Mr. GEORGE this year represented by some of his best architectural work. Mr. GEORGE has also contributed to the Water-colour Room a charming drawing from "Pisa."

Mr. ERNEST NEWTON, the latest of the architect-Associates, has four drawings exhibited, all water-colours of domestic work. No. 1553 is entitled "Four Acres," Epsfield, Middlesex, and shows a white plastered house with a tile roof, in which are blank gabled dormers, justified from the absurdity which many young architects have by the heads of the windows beneath them rising slightly above the level of the main eaves. Thus an intense feeling of simplicity and sobriety is attained in

masterly fashion. No. 1554 is a characteristic ERNEST NEWTON house in red brick with stone and plaster bays, tile roof with wooden dormers, and a big white cornice. This is a "House at Ewhurst, Surrey: Garden Front." No. 1563 and 1568 are both views of a house at Hambleton, Surrey, the former showing the garden porch and the latter the general view. This house also is in brick, apparently purple for the main walling and red for the dressings, surmounted by a tile roof. The garden porch is a semi-circular one with columns carrying a flat roof that forms a balcony to the upper floor, protected by a very simple but effective iron railing. The general view shows that the front entrance also has a stone porch with a circular hood. The whole design is full of reserve and a character of homelikeness.

Amongst other domestic work in the present exhibition there are many varied examples justifying the claim that we in England make for the high position that is held by our present-day house designers. Mr. FRANK M. ELGOOD's "No. 22 New Cavendish Street, W." (1483), is a dignified and yet interesting town house with a central entrance and two-storeyed bays on each side. Mr. ELGOOD is fortunate in not being obliged to carry up this building more than three storeys and a roof attic. Mr. W. HENRY WHITE, in his "No. 89 Harley Street" (1488), has one of his characteristic narrow-fronted town houses with bay window and side door on the ground floor and tiers of three windows in a row above. Mr. WHITE in this instance has been able to adopt eminently satisfactory proportions to his windows with good detail.

Mr. EDWARD J. MAY contributes a sheet of "Interiors, Webbington House, Somerset" (1506), drawn by Mr. RAFFLES DAVISON, which indicate a striking variety of treatment in the different parts of the house. The drawing room has an ornamental plaster ceiling, and panelled walls also apparently in plaster; a corridor at top of the stairs is treated with quaint woodwork and a high segmental barrel ceiling with decorated plaster ribs cut across by wood beams, whilst what we take to be the hall has an admixture of wood and stone.

MESSRS. HORACE FIELD & SIMMONS, in their drawing of "Two Houses, Westminster" (1508), show that they have been able to produce what appears to be one building at the corner of two streets out of two houses, not even a tell-tale party wall being shown. This is hardly in compliance with the principle of truthful expression in design, though the temptation is great. "Bunch Cottage, Haslemere" (1528), by Messrs. READ & MACDONALD, with a stone lower storey, tile hanging and tile roof above, is a very pleasant example of art—full simplicity in design, attained by much thought. Mr. P. LESLIE WATERHOUSE's "House at Hampstead" (1522) is of the modern picturesque type in plastered walls with just a little brick for plinths, chimney stacks, &c.

"The South Court, Ewelme Park, Swyncombe, Oxon" (1530), by Mr. L. STANLEY CROSBIE, is shown in a gay water-colour which depicts a manor house type of dwelling with a long range of half-timbered first floor framed by projecting wings with plastered walls—a very satisfactory treatment. There is much skill displayed in the handling, particularly of the half-timber work. Mr. OSWALD P. MILNE gives us a good example of the value of balance in design in his drawing of "Drakestone, Stinchcombe, Gloucestershire" (1534), a stone-built house with square-headed, straight-arched windows, in which the local feeling of the Stroud Valley is well maintained. Pleasant lightly tinted pencil drawings by Mr. A. WINTER ROSE show "The Entrance and the Billiard Room Doorway, Millfield, Brentwood" (1535), which suggest studies of the Renaissance period in Holland, combined with a "Wilton window" that rather mixes the flavour.

NOTES AND COMMENTS.

THE House of Commons has refused to approve the present scheme of the Corporation of London for St. Paul's Bridge by ordering the recommittal of the Bill before the House. It is gratifying to find that the æsthetic amenities of London are recognised by the Legislature as worthy of careful consideration, and the *Times* and Professor BERESFORD PITE are to be congratulated and thanked for the part they have taken in educating public opinion as to the value of architectural considerations in connection with a scheme for a bridge which might be a great artistic improvement to the City of London.

It has been proved to the satisfaction of the House of Commons "that the Corporation have not considered this matter from an architectural standpoint." Thus the House has shown that this assertion, which Mr. DOMONEY, the chairman of the Bridge House Estates Committee, styled a fallacy in a letter to the *Times*, is, in its opinion, a verity. Mr. DOMONEY, in his letter, gives away the case of the Corporation when he says "the Corporation could not have given fuller opportunity to the representatives of the Institute of British Architects to express their views than they have done. By the Common Council, the Bridge House Estates Committee, and myself, as the Chairman of that Committee, deputations of eminent artists and architects have been received and their views discussed and considered on many occasions from the inception of the scheme."

THIS is the crux of the whole matter. The "eminent artists and architects"—the distinction is typical—say that the Corporation ought to have the advice of expert architects upon their scheme; the Bridge House Estates Committee hold that their decision is sufficient and reliable without any advice from artists, whether architects or not. They consider themselves competent to decide what is best for the beauty of London without following the course recommended by the members of the Royal Academy, Mr. ERNEST GEORGE, Sir GEORGE FRAMPTON, Mr. REGINALD BLOMFIELD, Mr. JOHN S. SARGENT, Sir LAWRENCE ALMA-TADEMA, Sir THOMAS BROCK, and Mr. JOHN BELCHER, who urged that the approval of architects of recognised experience should be added to the evidence of two engineers and a surveyor before a scheme for the bridge could be considered worthy of the present opportunity.

WHEN one comes to investigate the case for the Corporation's scheme the only arguments in its favour that have been put forward seem to be that it will facilitate a through tramway connection between north and south London, it will enable the police to hold up all road traffic between north and south, and between east and west, for half of every working day at yet one more point, and it will cost a million pounds less than

one scheme proposed by somebody else. As we have before said in these columns, it is more than doubtful whether there is any necessity for a through tramway route between North and South London. It is indeed an open question whether the improvements in motor traction are not within measurable distance of giving the *coup de grace* to tramways.

THEN it has never been even suggested that the Corporation scheme is better than, or even as good as any other possible scheme from any one point of view—tramway, general traffic, architectural, or financial. It is unfair to condemn any alternative scheme because it will entail a higher initial capital expenditure, without taking also into account the question of recoupment. A scheme costing five millions instead of the Corporation's two and a half might be very much cheaper in the long run. Professor PITE's suggestion has been set up as a Aunt Sally for Mr. DOMONEY's stick of an extra million but the Professor is quite justified in his reliance on recoupment to reduce this to one year's income of the Bridge House Estates Committee, and Mr. DOMONEY's only answer is that Professor PITE has over-estimated the present income of the Bridge House Estates. It may be remembered that Messrs. CROSS and HUBBARD suggested a scheme that would cost even more than Professor PITE's, but, as we said at the time, it would bring a splendid recoupment. There are many possible ways of planning a St. Paul's Bridge that would be better than the Corporation's scheme, æsthetically, practically, and financially, and it is therefore wise that it should be recommitted by the House of Commons.

THE close proximity in point of time between the unveiling of our national monument to Queen VICTORIA and that of the Italian memorial to King VICTOR EMMANUEL II. at Rome naturally invites a comparison of the two, and we can hardly help feeling eclipsed by the greater magnificence and costliness of the Italian tribute to a great ruler. It is significant of the different attitude towards Art, if not of the depth of gratitude and respect that exists in the Latin nation as compared with ourselves. The Victor Emmanuel monument has been in progress since 1884: our own has been completed within ten years, and the difference in time fairly represents the difference in magnitude of the two memorials.

THERE need be no fear on the part of the public that the many stands which will be occupied this week by sight-seers of the Coronation processions are lacking in strength. Their construction has been critically supervised by the District Surveyors of London, and is undoubtedly superabundantly strong. But the danger of fire is quite another matter, and the British Fire Prevention Committee deserve public gratitude for the timely recommendations issued by them and published by us last week for minimising not only this danger but also that of panic which an alarm of fire in such combustible structures might readily excite.

THE *City Press* recently printed an interview with Mr. PAUL WATERHOUSE on the subject of arcing for London streets, which is well worthy of the careful attention of our local authorities. Our foot traffic as well as the vehicular is, in the heart of London, becoming a very serious problem, and arcades or colonnades would be of material assistance in reducing the congestion. Their use would also be of benefit rather than otherwise to shopkeepers, and increase considerably the amount of window space at their disposal for the display of their goods. Needless to say, such an innovation would greatly tend to the improvement of London's street architecture.

THE restoration of the Old Brig of Ayr has been completed by the insertion of two bronze panels, commemorating the work. The inscription on one reads "In admiration of ROBERT BURNS and his immortal

poem, 'The Brigs of Ayr,' this brig was during 1907-10 restored by subscriptions received from all parts of the world.—R. A. OSWALD, chairman of the Preservation Committee"; and on the other: "The Auld Brig of Ayr. Erected in the thirteenth century. Preservation work, 1907-10. Reopened by Lord ROSEBERY, July 29, 1910.—JAMES S. HUNTER, Provost of the Burgh of Ayr."

PARTICULARS of sale of the freehold residential, manorial, and sporting estate known as "Addington Palace," formerly one of the archiepiscopal residences of the Archbishop of CANTERBURY, have been prepared in view of the sale by auction on July 11 by Messrs. DOUGLAS YOUNG & Co., and contain not only an interesting historical account of the manor and palace, but good photographic views of the architectural treatment of the existing Georgian mansion with the various additions made since its first erection, including the grand salon and ball room carried out from the designs of Mr. R. NORMAN SHAW, R.A.

MR. ARTHUR HARSTON, in a letter to the *East London Observer*, calls attention to the cause of the decay of the Victoria Fountain in Victoria Park, which he attributes, probably correctly, to the scraping of the surfaces of the stone, thus removing the indurated quarry sap, which with many stones forms a protective coating. It should be remembered by the custodians of all stone buildings that cleansing by scraping is a risky proceeding.

It is difficult to credit in these days that such a condition of hygienic defect can exist in any schools as is described in the latest annual report of the Medical Officer for Cumberland, who finds that many schools in the county have insufficient window lighting, defective air supply, inefficient warming arrangements, and cloak-rooms "little better than cells or enlarged sentry boxes."

THE CONCRETE INSTITUTE.

(Concluded from last week.)

THE proceedings on the second day opened with a poor attendance to hear a paper by Mr. Alfred E. Corbett, F.R.I.B.A. (of Messrs. Woodhouse, Corbett & Dean, architects), on "The Y.M.C.A. Building, Manchester." He pointed out that, hampered by a small site and rigid limitations of height, it was not a simple problem to meet the requirements of a modern Y.M.C.A., including such varied accommodation as a large hall to seat over 900, and a small hall to seat 150, with ante-rooms and separate access to the public, four shops and cellars, a large gymnasium with a 24-lap running track, two fives courts, a swimming bath, café and kitchen, billiard-room for four tables, smoke-room, large lounge or common-room, offices for staff, eleven class-rooms, two photographic dark-rooms, juniors' common-room, locker-rooms, shower baths, lavatories, &c.

Special Reasons for Adoption of Reinforced Concrete.

The original working drawings were made with a view to brick walls and skeleton steel construction; and the decision, when they were nearly completed, to make it a reinforced-concrete structure was largely due to two parts of the building which seemed peculiarly suited for such construction.

The swimming bath, 60 feet by 21 feet, on the top floor of the building, might have been constructed as an iron tank, lined with asphalt and glazed brickwork, but the initial cost and maintenance would be considerable. Reinforced concrete seemed much the simplest method to adopt for this tank.

The other special construction was the method of spanning the large hall, a 50-feet span, without columns. The floor above the hall consists of class-rooms, and was so arranged that the division walls between the class-rooms would form trussed girders 12 feet deep and 50-feet span, supporting the floors of the class-rooms, and of the gymnasium immediately over them. These trusses were designed in steel, with the intention of enclosing them in solid concrete walls for preservation, but it seemed more reasonable to use the concrete for constructional as well as protective

purposes by reinforcing it with about one-sixth of the amount of steel required in a steel truss.

These special considerations, allied to the ordinary advantages, induced the architects to carry out the work in reinforced concrete; and now that the work is finished they are convinced that the right decision was come to, in spite of the difficulties which they had to surmount.

Approval by Local Authority.

The first and most serious difficulty was with the Corporation. At that time the material was not recognised in the Manchester by-laws, and although powers to deal with it were being applied for, the architects were too early to get a ready consent to their proposals. In fact, until the building was actually started, they did not know whether they should have to thicken the walls up to the by-laws' standard for brick, in spite of a five-months' delay by the Corporation before passing the plans. Eventually approval of the plans was given, subject to no external wall being less than 9 inches thick.

Partly to this delay, and partly to the elevations having been designed for brick walls in the first instance, is due the thickness of the walls in some places. The elevations cannot be claimed as the logical outcome of a reinforced-concrete structure; but they are not grossly inconsistent with such a structure; and there was not time to attempt to entirely recast them.

Schemes were invited from five firms of specialists, accompanied by tenders from contractors nominated by the specialists. The complete work was divided into two separate contracts, the first contract embracing reinforced concrete, excavating, drains, terra-cotta, and asphalt, *i.e.*, the whole of the work required for a complete "carcase"; and the second contract embracing joinery, plastering, and all other "finishings" required.

Specification Clauses.

A specification was supplied to each firm of specialists with some unusual clauses.

The floor load throughout the building was to be 2 cwt. per sq. ft., in addition to weight of floor. This high load was adopted at the request of the city authorities.

Provision was made for testing steel and cement before use; and for tests of portions of the flooring two months old with a super load of 3 cwt. per sq. ft., the deflection not to exceed $\frac{1}{100}$ of the span. This is probably much too lenient as regards deflection, and $\frac{1}{100}$ of the span would be a reasonable limit.

If the results of compression tests of sample cubes of concrete showed the strength of concrete to be less than 95 per cent. of the strength allowed for in the calculations the architects could require all work done from the batch in question to be replaced by fresh concrete at the contractor's expense.

The architects might also select any member or portion of the structure to be tested to destruction twenty-eight days after moulding. If the pieces tested failed under a load of less than four times the calculated safe load, the corresponding part of the actual building was to be strengthened to the architects' satisfaction, and the whole cost of such strengthening, and of the test, shall be borne by the contractor. If the piece did not fail the net cost of the piece and the cost of the test was to be borne by the proprietors.

It was also specified that provision should be made for skilled supervision during erection, and consequently one of the specialist's engineers was resident on the work.

Comparison of Schemes.

The competing specialist firms were asked to supply sufficient particulars to enable the architects to check the strengths of the respective schemes, and four out of the five complied. It was, of course, impossible to check the entire design, but the architects selected typical members throughout the building and calculated their strength in accordance with the Report of the Joint Committee on Reinforced Concrete appointed by the Royal Institute of British Architects, and tabulated these as a percentage of the strength required.

The scheme on which the lowest tender had been submitted did not come very creditably through this examination, and was set aside.

The next two schemes were very satisfactory in point of strength, although in each case certain parts required strengthening to come up to the R.I.B.A. standard.

It was decided to accept the tender of Messrs. J. Bentley & Co., of Bradford, for the scheme submitted by the Trussed Concrete Steel Company, Ltd., on the "Kahn" system, which was next to the lowest in price. An important con-

cession was made during the negotiations, viz., that in developing the working drawings every member should be calculated to the R.I.B.A. standard, the drawings and calculations being referred to Mr. C. F. Marsh, M.Inst.C.E., for him to decide if this was the case; his fee to be paid by the specialists. This was of great value in getting the approval of the Corporation.

Cement and Concrete.

In defining the concrete to be used, instead of specifying materials and proportions, it formed part of the contract that the concrete at twenty-eight days old should have a crushing strength of 154 tons per sq. ft., this being the standard given in the R.I.B.A. Report.

A very interesting series of tests was then undertaken to ascertain the most suitable local materials and their proportions (published in the R.I.B.A. *Journal* for November 12, 1910). Finally a mixture was adopted of 1 of Earle's Pelican cement (by volume), 2 of a half-and-half mixture of Runcorn river sand and Openshaw pit sand, and 4 of a coarse sandstone, known as "Bolton granite"; or, in other words, 1 cwt. of cement, 3 cubic feet of sand, and 6 cubic feet of stone, the stone passing a $\frac{3}{4}$ -inch mesh. This gave the required strength in the preliminary tests.

Retaining Walls.

The foundations were on fairly hard red sandstone, on which a pressure of 7 tons per sq. ft. was allowed. The retaining walls were designed as beams subjected to a horizontal load, and supported at each end by a stanchion, instead of either depending on a sole piece for stability or acting as a vertical beam against the floor.

The Corporation would not allow the whole site to be excavated at once, on the ground of risk of settlement in adjoining streets; and the work was done a bay at a time. The soil was a stiff clay, and nearly all the retaining wall was formed by removing a portion of the timbering at a time and casting the concrete solid against the clay, thus removing all possibility of settlement.

It was first intended to trust to the concrete wall for resisting damp, but the Corporation insisted on a cavity wall, which we formed by means of a 3-inch brick-on-edge wall in cement inside the retaining wall. They also insisted on connecting the cavities by $\frac{3}{4}$ inch of rock asphalt over the backs of the piers where the retaining wall rested against them.

Terra-cotta Facing.

The building is cased externally with Burmantofts "Marmo" ware of a chocolate colour for the ground storey, and Burmantofts "Vitreous Buff" terra-cotta for the upper storeys. It had been intended to have a more interesting colour scheme of "Marmo" ware throughout, with a green base and cream upper part, but the committee reversed their decision.

The terra-cotta is only $4\frac{1}{2}$ inches on bed, and has no structural function except to provide an impervious facing from which the Manchester soot can readily be removed. The back of each block was hollowed out with dovetail-shaped hollows, and the blocks were built up in cement to a height of 2 feet or so, forming a $4\frac{1}{2}$ -inch wall or skin outside the steel reinforcement. Inside the reinforcement was a face of wooden centering, and the concrete was deposited between this temporary inner centering of wood and the permanent outer centering of terra-cotta, the dovetailed hollows of which it completely filled, making a perfect bond between concrete and terra-cotta. Projecting cornice blocks were secured by stout wire or thin rods.

The method appears to be entirely successful, and there is not a suspicion of a crack in any part of the facing.

Air Inlets.

The system of ventilation required a number of air inlets through outer walls, and these were made by running 4-inch glazed drain-pipes through the wall beams, at or below the neutral axis, and masking the outer ends by decorative pierced panels of terra-cotta. A more important device for ventilation occurs in the cantilevers supporting the gallery in the large hall. An inlet air flue of 5 sq. ft. area was required between the floor of the gallery and soffit under same, and this flue was carried through the cantilevers, between the compression and tension members of a triangulated truss.

Gallery Cantilever Test.

One of the larger cantilevers at the back of the gallery was tested eight months after construction with a super load of 2 cwt. per sq. ft. The greatest deflection was $\frac{1}{10}$ inch, or $\frac{1}{100}$ of the length of cantilever, of which deflection

one-half disappeared on removing the load. Stout supports were erected to within 2 inches of the soffit to prevent damage in case of a collapse or undue deflection.

Swimming Bath.

Perhaps the most interesting part of the building is the fifth floor swimming bath, in which over 180 tons of water have a surface 57 feet above the street; though the interest may be due rather to comparative novelty than to any actual difficulty of construction.

It is simply a rectangular box, 60 feet by 21 feet, and rests on transverse beams varying in depth from 3 feet to 6 feet 6 inches and 26 feet span; the thickness of bottom being $7\frac{1}{2}$ inches, and the sides being from 5 inches to $6\frac{1}{4}$ inches thick.

It was carefully considered whether to line it with asphalt or similar lining, and finally it was decided to trust to the concrete alone, simply lined with glazed tiles set in cement.

The various holes required for steam and water pipes, electric tubing, &c., were nearly all cut out afterwards, because of the difficulty of getting them in the exact positions if they were formed while casting the concrete.

Holes for Pipes.

Many pipe holes were avoided by the provision of two chases from roof to sub-basement, large enough for a number of pipes and for access to same.

Tiling and Terrazzo.

The walls in some of the principal rooms and stairs are tiled with Chance's "Vitreous Tiles," and in the lavatories and kitchen, and round the swimming bath, are covered with marble terrazzo mosaic. Terrazzo was also used in the convenient form of reinforced slabs, $1\frac{1}{2}$ inches thick, for w.c. or shower-bath divisions.

Area Whitewashed.

The internal light area was intended to be tiled; but cement rendering, which is to be periodically whitewashed, was ultimately substituted.

Hollow-tile Floors.

The bulk of the floors throughout are constructed with hollow tiles separating 4-inch reinforced-concrete joists, to prevent transmission of sound.

Cost per Cubic Foot.

It is not possible yet to give the cost as finally adjusted, but it is believed this will be very close to the original amount stipulated, viz., 35,000*l*.

The cost per cubic foot, measured from under side of concrete foundations to top of roof, works out about as follows:—

	Per ft. cube.
Complete reinforced-concrete structure, including walls and floors and filling to terra-cotta; excluding excavating ...	3.0 <i>d</i> .
Terra-cotta facing, including fixing ...	1.1 <i>d</i> .
All other trades together ...	5.1 <i>d</i> .

Total approximate cost ... 9.2*d*.

Various circumstances combined to make this a very cheap building, and it would probably cost more to duplicate it.

Time of Building.

The first slab of concrete was laid on April 29, 1909, and the concrete structure was completed on September 15, 1910, so that the complete concrete and terra-cotta shell occupied $16\frac{1}{2}$ months in erection, which was considerably more than we expected.

Mr. W. G. PERKINS (District Surveyor, Holborn) said he had been struck by the unreasonableness of some of the requirements of the Manchester Corporation. In the Y.M.C.A. building in London just the same problems had had to be faced as in the new Y.M.C.A. building in Manchester, and much the same construction adopted.

Mr. G. C. WORKMAN remarked that he was previously aware of the tremendous difficulties with which the architects of the building had had to deal, because he had been concerned in getting out a preliminary scheme. He would very much like to hear why the swimming bath was put upon the fifth floor, as he should have thought it preferable to have it in the basement. It seemed to him that great praise was due to the architects for their pluck in boldly designing a huge building such as the Manchester Y.M.C.A. in reinforced concrete while they were aware that there were no by-laws at the time recognising the material. A great many architects similarly placed would have turned round and said they did not see their way to using the material because it would mean delays and difficulties. Mr. Corbett

s quite right in asserting that such a high floor load throughout the building as 2 cwt. per sq. ft. (in addition weight of floor) was unnecessary, and far more than was needed. It would be interesting to know if the actual by-laws of the Manchester Corporation were going to make such an absurd requirement. It was a pleasure to hear that although in the specification provision was made that in parts of portions of the flooring two months old with a per load of 3 cwt. per sq. ft. the deflection was not to exceed $\frac{1}{800}$ of the span, Mr. Corbett thought that much lenient, and that $\frac{1}{800}$ of the span would be a reasonable limit. The permissible deflection of a beam ought strictly to be calculated in each case, as it varies with a whole lot of circumstances and is very elastic. It had been mentioned Mr. Corbett that in the test on one of the larger cantilevers at the back of the gallery stout supports were erected within 2 inches of the soffit to prevent damage in case of collapse or undue deflection. That plan was an excellent one, because in his own practice it always seemed to be his (the speaker's) duty to stand underneath the part tested. The architects for the Y.M.C.A. building at Manchester had used five specialist firms to send in competitive schemes. That method was open to objection; the better way seemed to be for the architect to investigate the different methods and then to invite the one he liked best to quote a price. The prevalence of the other way meant a very serious state of things for the various firms of reinforced concrete engineers, to get flooded with demands for schemes from architects all over the country. The firms do not like to give offence by refusing to comply with the requests, but they would very much prefer the architect to make up his mind from the start as to the method he wants to adopt.

Mr. H. E. YEATMAN also spoke in favour of the provision for emergency supports during tests. If a test was made at which it implied the possibility of failure, and against that possibility provision should be made. He could quite sympathise with the difficulties of competing tenderers who did not know whether to scamp their designs or by declining to do so to run the risk of not seeming as cheap as the others. In his opinion an engineer should be employed to decide not which is the cheapest scheme but which of them will give the best results.

Mr. S. BYLANDER said it was very pleasant to find the amount of information Mr. Corbett had imparted to them. He had let them see his working drawings, and given complete details of all his difficulties. That was what they, as engineers, wanted to know. One of the specification provisions was that there should be skilled supervision during erection, and, consequently, one of the specialist's engineers is resident on the work. It would be interesting to hear what that expert was paid. In his (the speaker's) opinion, such an engineer should be paid for by the client. The presence of such an expert seemed to be more important than the selection of a particular system, for most of the defects have hitherto been due to a careless carrying out of the work rather than to ignorance on the part of the architect or of the draughtsman. As to tests, it seemed to him that the part to be tested should really be the column.

Mr. E. P. WELLS, J.P., the Chairman, closed the discussion, and proposed the vote of thanks.

Mr. A. E. CORBETT, F.R.I.B.A., then replied to some of the points raised. There were not, he said, yet any by-laws of Manchester dealing with reinforced concrete. Each case must be submitted on its own merits to the city authorities, and against their decision there is no appeal. The Corporation possess the power to draw up by-laws, but have not done so yet. The placing of the swimming bath on the fifth floor was simply a matter of light and air. He believed it was largely due to that arrangement that they won the competition. In its present position it was almost like going through the exercises in the open air. And he did not think the cost would have been very much more than if they put the bath in the basement. With regard to competitive schemes, it was only in exceptional cases that an architect would go to a specialist firm direct. Payment of the resident engineer was in the Y.M.C.A. building contract made by the specialist firm whose scheme was adopted. The testing of the columns as advocated could only have been carried out by the expenditure of a small fortune.

THE Arts and Crafts Committee of the Governors of Robert Gordon's Technical College, Aberdeen, have under consideration the sketch plans of Mr. J. A. Ogg Allan for the reconstruction and extension of the School of Art at an estimated cost of 35,000l.

ARBITRATORS AND THEIR AWARDS.

(Concluded from last week.)

AN award in the alternative, namely, that one party shall do one thing or another, is not subject to the objection of being uncertain; for when such party has performed one of two things, he has performed the award; even where the award is in the alternative, and one of the things awarded to be done is impossible, or uncertain, the party can and is obliged to perform the other alternative.

An award to be binding on the parties must be final and determine all matters contained in the submission.

Any delegation or reservation of authority by an arbitrator vitiates an award, for an award would not be final that left anything to the future judgment or power of the arbitrator.

Where part of the matter in dispute is excepted for future litigation, the award is not final.

Where, on a dissolution of partnership, the arbitrator directed that a matter arising as to a liability on a promissory note should not be affected by the award, the award was held not to be final.

Where it was awarded that a certain sum was due from the defendant to the plaintiff, and that the defendant should pay the sum due, unless he shall within twenty-one days make an affidavit as to certain receipts, and if so, a certain sum was to be deducted from the sum awarded, the award was held not final and, therefore, bad.

An award depending upon certain subsequent facts is entirely void.

Another point regarding awards is that they must be *mutual*, that it must not be entirely of things to be performed by one party, without such things being in satisfaction of the matters in difference. The application of this rule seems to have been fatal to many awards in former times. The rule to be collected from the old cases on this subject is, that if the award was merely that one party should do an act without anything awarded to be done by the other party, if it were not alleged to be made of and upon the premises, or of the matters in controversy or like, then the award was void; but if it appeared by recital or otherwise, on the face of the award, that the award was made of all the controversies submitted, then the award was good, although the matters awarded to be done were entirely on one side. But the good sense of modern times has, in a great measure, exploded this distinction, and the Courts will now decide that the award is made of all things submitted, unless it appear to the contrary; and it is always presumed that money awarded to be paid, or a collateral thing ordered to be performed, is a final arbitrament of all matters submitted on both sides. It is, however, quite clear that an award must be mutual; therefore, whenever the arbitrator has omitted to decide on all the matters submitted to him, the award is not final or mutual, as the whole matters on both sides have not been determined. In cases where the thing awarded on one side is bad for uncertainty or otherwise, and that part forms the consideration of what is to be done on the other side, and void for want of mutuality, so where there are demands on both sides, if the arbitrator make his award of those only on one side, here the award of all things submitted to him and consequently the award is not mutual.

An award of something impossible, illegal, or of no advantage to either party, is bad. Thus, unless awarded in the alternative, where a party is awarded to do an act which he has no power to perform, it is not obligatory upon him; as that one party shall deliver up something which is not in his custody or power, or that one shall procure a stranger to be bound with him, have been severally held to be a bad award, the things awarded not being in the power of the party to perform; but if it be awarded that a person shall pay a sum of money, or enter satisfaction on a particular judgment, and there never was any such judgment, the award is good, for the party has the alternative to pay the money.

An award must be reasonable; several instances are reported where awards have been held void for being unreasonable. Whether an award be reasonable or not depends, of course, upon the particular circumstances of each individual case. The Courts, at the same time, must have a very strong case made out before they will refuse to enforce an award for being unreasonable.

It has been decided that an award was bad where it was awarded that a party (a lessee for years) should make some alteration on the demised premises, which in him would have amounted to waste, and the performance of the award would subject the party to an action. So an award that a

party should do an act which would amount to a trespass is void. An award must be advantageous; if the thing awarded cannot by any possibility be of any advantage to either party, the award is void; also, if an award is manifestly inconsistent or absurd, the award will not be enforced in a court of law.

In all these cases of an award directing an illegality or impossibility to be done, if it awarded in the alternative as that the party shall pay a sum of money, or do such illegal or impossible act, he is bound to pay the money.

It remains to consider to what extent an award is vitiated by an award of something that is uncertain, illegal, or beyond the submission. In olden times it was always held that an award that was bad in any of its parts was bad for the whole; but afterwards the Courts began to decide that if the breach was not assigned on the bad part of the award, and if that part did not affect the whole matter awarded, then the award was only bad for that part; and it is now quite clear that an award may be bad in one part, and yet good and binding in another part. The rule may be laid down to be that, if the bad part of the award be not distinct and independent of the rest of the award, or if by the nullity of the award in any part, one of the parties cannot have the advantage intended him as a recompense or consideration, the award is void in the whole. But if a thing be awarded to be done is bad for uncertainty, or as being beyond the submission, or for any other objection, and this part does not form a consideration for the performance of the matter awarded on the other part, and is distinct and independent thereof, then the award is only void for so much. A distinction in this respect prevails between an award of several things, some of which, as we have seen, may be bad but not so as to vitiate the whole of the award, yet where one entire thing is awarded which is not in its nature divisible it cannot be apportioned. As where one sum is awarded to be paid in an action at law brought to enforce the award, the Courts cannot enter into the question as to what part of the sum is, and what part is not, within the submission; but if the arbitrators have exceeded their authority in awarding any part of an entire sum, the award cannot be enforced at all. However, on a motion to set aside an award, if it can be ascertained how much of one entire sum is ill-awarded, the Courts would apportion the sum, and support the award for so much as was within the submission.

In all cases where an award, void in part, may be supported for the residue, it must always be understood that it does not appear that the arbitrator had omitted to make his award of some matters submitted to him; for in that case, if the void part was one of the matters in controversy, and that bad for uncertainty or otherwise, the award would be void in toto, as the arbitrator had not made his award upon all matters referred to him. The principle upon which it is so held is that the consideration for which the party submitted was that the arbitrator should make an award of all matters in difference, and which consideration has failed. And so, wherever the void part of an award is the consideration or recompense of the thing awarded on the other side, the award is entirely void. So, wherever there is a good award standing alone, but in a subsequent part there is reservation or delegation by the arbitrator of his authority, which runs over the whole award, this latter part vitiates the whole award.

With the foregoing knowledge an arbitrator should be in a position to prepare his award, the details of which I have not time to further go into. I can only add that I shall be pleased to answer any question which may be submitted to me, and I trust that what I have said may be of assistance to some of you who have to prepare awards as arbitrators or who may have to consider the question of the legality of awards that have been made for or against clients.

COMPETITION NEWS.

BRADFORD.—Mr. Keith D. Young, F.R.I.B.A., the assessor, has now announced his awards in the New Infirmary competition, which are as follows:—First prize, Mr. Wm. A. Pite, London; 2nd prize, Messrs. F. E. Halford & A. E. Cutler, London; 3rd prize, Messrs. Arthur Marshall, P. D. Prior & W. A. Smith, Nottingham.

MANCHESTER.—The City Council, on the advice of Mr. Reginald Blomfield, A.R.A., in conjunction with the City Architect, have selected ten designs prepared by the following competitors to take part in the final competition for the proposed library and art gallery on the Piccadilly site:—Messrs. H. Percy Adams & Charles H. Holden, 28 Woburn Place, Russell Square, London, W.C.; Mr. Robert Atkinson, 2 South Square, Gray's Inn, London, W.C.;

Messrs. Bradshaw & Gass, and Mr. Arthur J. Hope, 1 Silverwell Street, Bolton; Messrs. Cooper & Slater, 13 Richmond Terrace, Blackburn; Messrs. Crouch, Butler & Savage, 39 Newhall Street, Birmingham; Mr. R. Fielding Farrar, 10 Park Row, Leeds; Messrs. A. Graham Henderson & John R. Hacking, 144 St. Vincent Street, Glasgow; Mr. Frank W. Simon, May Buildings, North John Street, Liverpool; Messrs. Warwick & Hall, 13 South Square, Gray's Inn, London, W.C.; Messrs. Thomas Worthington & Son, 4 Brown Street, Manchester.

WALLSEND.—At a meeting of the Wallsend Education Committee on Thursday it was reported that twenty sets of plans for the proposed new elementary school had been received, and on the recommendation of the President of the Royal Institute of British Architects, Mr. A. W. S. Cross, M.A., F.R.I.B.A., of London, had been selected as assessor.

ILLUSTRATIONS.

SONNING, WESTCLIFF-ON-SEA.

THIS house is a fair example of the type of residence that has been built in the London suburb at the mouth of the Thames. The architects were Messrs. Cabuche & Hayward.

A SUMMER COTTAGE.

IT is not easy to reconcile an interior designed in obedience to modern ideas on the heights of rooms, the size of windows, and so on, with an exterior treatment expressing the restful simplicity which is so important a factor in the charm of old cottage architecture. An attempt to do so has been made in the design illustrated, attention being drawn to the points of interest by the suppression of all unnecessary features and a simple grouping of parts. The plans show on the ground floor a large dining and general room, 15 feet by 20 feet; a morning-room, 14 feet 6 inches by 12 feet 9 inches, with roomy kitchen accommodation and offices, and on the first floor one bedroom, 15 feet square, two bedrooms, 13 feet 6 inches square; dressing and bathroom; and a liberal proportion of cupboards. The design is by Mr. M. E. Walker, A.R.I.B.A., and Mr. A. W. Harwood.

A CORONATION FIREPLACE.

THIS mantelpiece is designed for erection in a manor house of Tudor type as a memorial of the Coronation of King George V. As shown in the drawing, the hood and its supports are in oak, with marble slips around the fireplace opening. The design has been prepared by Mr. I. Swinfen Harris, F.R.I.B.A.

DESIGNS FOR STAINED GLASS.

DESIGNS for stained glass by Mr. William Glasby and Mr. Arthur A. Orr are pretty regularly represented in the Architectural Room of the Royal Academy, and the drawings we now reproduce are exhibited there.

THE foundation-stone will shortly be laid of extensions to Bedlington Church. A north aisle or additional nave, 68 feet by 28 feet, with open timber roof, will be built in place of the present apsidal building. The plastered ceiling will be removed, and boarding with moulding, &c. (at a higher level) will be inserted. Gothic windows will be provided in place of the sash windows. Dilapidations throughout will be made good. Vestries (with sliding partitions between them, 15 feet 6 inches by 14 feet and 13 feet 6 inches by 14 feet) and an organ chamber 15 feet by 14 feet will be added to the north of the chancel, and with heating chamber and coal store under. The contract has been let to Messrs. R. & G. Brown of Amble. Mr. A. B. Plummer, F.R.I.B.A., Newcastle, is the architect.

THE Board of Education have informed the Woking Urban District Council of their approval of the plans submitted by the Surrey County Council for a boys' secondary school and technical institute. The secondary school consists of eight classrooms, accommodating 200 boys, masters' room, waiting room, dining room, common room, library. The following rooms are common to the secondary school and technical institute: Assembly hall for 550, physical laboratory for 40, chemical laboratory (with preparation and balance room) for 25, elementary art room for 26, life room for 20, modelling room for 17. The following are to be used exclusively for the purposes of the technical institute: Four classrooms (two for 25 and two for 30), four workshops, masters' room, secretary's office, cloak room and offices, caretakers' rooms on the second floor.

THE HERALDIC YALE OR JALL.

AT a meeting of the Royal Archæological Institute last week in the apartments of the Society of Antiquaries, Burlington House, W., an interesting and exhaustive paper, accompanied by a number of lantern slides, was read by Mr. G. C. Druce, which he called "Notes on the Heraldic Jall or Yale." Of this we are able to give the following greatly condensed report.

It is not often, he said, that so much interest is aroused in a heraldic detail as has lately been the case through the resurrection, if that term may be used, of the heraldic Jall. The animal came to light in the course of researches by Mr. Ernest Law at the Record Office, who found it mentioned in entries of accounts relating to the building of Henry VIII.'s bridge at Hampton Court Palace in 1535-36. One of them, under the heading of "For Makying of Beestes for the Ston Brydge," after recording the payment for six of the beasts, proceeds: "Also paid to Ryed. Rydge (a-foresaid) for lyke cutting, carrying, fienesshing and makynge of VI. beests of the Kyngs and Quenys and jall and Innecome, a dragon, a lyan, a greyhonde, and a pantt' baryng the Kyngs arms and the Quenys standing upon the Kyngs brydge a-foresaid at lyk pryse" (i.e., "26s. the pece"). There are other entries relating to beasts to set upon the fountain in the Inner Court and the garden in which Jalls occur; so that there seem to have been a good many altogether.

The bridge, after having been obscured by the pulling-down of the parapets in 1691 and filling-up the moat, is now open to view again, and new beasts have been set upon it. The Jall may be thus described: It has a head and body resembling a horse, with a goat's beard and large boar's tusks, ringed horns curving backwards and outwards, with coarse corrugations on the top, tufts of hair and spots on the body, cloven hoof, and a tufted tail. The new beast on Hampton Court bridge being presumably a replica of the early heraldic Jalls, takes us back to the fifteenth century—the time when, as far as we know, it started as a heraldic device.

The Garter-stall plate of John Beaufort, Duke of Somerset, at Windsor, shows perhaps the finest representation of a Jall, and is c. 1440 in date. Its body resembles that of a horse, with short-tufted tail, hairy legs, and feet which give no indication of being cloven. It has a fine mane, goat's beard, and large boar's tusks. Its horns extend forward and backward with considerable curvature, and have coarse corrugations. It is covered with large spots. The animal appears (with variations) in the seal of John Beaufort's daughter, Lady Margaret, also in coats of arms over gateways of buildings with which she was connected, such as Christ's College, Cambridge; the judicial seals for the counties of Carmarthen, Cardigan, and Pembroke of the time of Charles I.; as a supporter of the shield of Baron Hunsdon in Westminster Abbey, who died in 1596; and the seal of the Custos, or Master, of Christ's College, Cambridge. The latter shows the Jall lying down; it has a body and head resembling an antelope, with mane and beard. The attitude of the Jall in this seal is the nearest approach to what may be called the ecclesiastical type, i.e., what we should expect to find in church architecture, and which we so find in the case of the heraldic antelope. There is no reason for its entire absence in church sculpture, because the Bestiaries were heavily drawn upon for details in that direction, as may be shown by the medallions on the twelfth-century doorway at Alne (Yorks), and also at Souvigny, in France.

The history of the Jall prior to its introduction into heraldry is somewhat involved. The old Heralds went to the mediæval Bestiaries for their birds and beasts, both for ideas as to their composition and also for their significance in heraldry, which was supplied by the text. Although there does not seem to be any mention of the Jall in any early heraldic treatise, it came from the Bestiary all the same, where it occurs under the Latin name of "Eale." In the recent correspondence on this subject in the *Times* there was some anxiety to derive the English name of "Yale" from an Arabic source, because there happens to be a goat there with a somewhat similar-sounding name. There seems to be no necessity for going so far, for the name "Yale" or "Jall" would appear to be but an anglicised form of the Latin "Eale."

With one small but very important exception the text of all the Latin Bestiaries is substantially the same, and runs thus: "There is a beast which is called Eale, as large as a horse, with a tail like an elephant's, of a black colour, with jaws like a wild boar, and bearing horns unusually long and adapted for compliance with any desired movement. For

they are not stiff, but are moved as the requirements of fighting dictate. Of which the one is extended in front when it fights, and the other is folded back, so that if the point of one gets blunted by any blow the other sharp one is used in its place." Some of the MSS. read "with the jaws of a goat (caprinis)" instead of "with the jaws of a wild boar (aprinis)." This no doubt affected the illustrations, as they were usually done after the text. In the MSS. where the reading is "aprinis" the Eale has no beard, but where it is a "caprinis" it has a goat's beard. The presence of tusks does not appear to coincide with any particular reading.

The heraldic Jalls, when used as supporters, were, of course, much conventionalised; but they are generally horse or antelope-like in shape, and have horns pointing forward and backward. That the horns are more curved than those of the Eale in the Bestiaries is probably due to heraldic requirements. The Heralds may not have liked the long, straight horns sticking out in such an ugly way, and seeing in so many MSS. that the Eale had "jaws like a goat," they not only adapted the goat's beard, but gave it curved and ringed goat's horns as well.

The account of the Eale in the Bestiaries was copied from Pliny's account of the beast in Book VIII., chapter 21. It is as follows: "Among the same people (the Ethiopians) there is also an animal which is called Eale, of the size of a river-horse, with an elephant's tail and of a black or tawny colour, having the jaws of a wild boar and horns more than a cubit in length, moveable (horns) which it raises alternately in fighting, changing their direction so that they sometimes point straight forward, sometimes aslant, as opportunity requires." The author of the Bestiary did not follow Pliny literally by substituting "as large as a horse" for "as large as a river-horse," i.e., a hippopotamus. Perhaps this was done out of consideration for the artists, who would never have seen a hippopotamus.

The question of the identification of Pliny's Eale with any natural beast has been raised. It is suggested that it is the same as the antelope gnu. But to this there are several objections, and it is doubtful whether it can be identified with any living animal at all. In the Chapter 21 quoted above Pliny deals with monstrous forms of animals, many of which were composite beasts. Very probably Pliny considered the Eale as a cross between the hippopotamus he describes in a later chapter and some other large-horned animal.

In addition to beasts of the Jall type, there are those of the antelope type. The heraldic antelope appears both as a supporter and also in ecclesiastical architecture. A seal of Humphry, Duke of Gloucester, dated 1422, shows gorged, antelope-like beasts as supporters, the dexter with good serrated horns pointing backwards, the sinister with what appear to be ringed horns. They have cloven feet and long tufted tails turned over the back. At St. George's Chapel, Windsor, we find these beasts as supporters to the arms of Henry VI. on a boss in the south-choir aisle. They have serrated horns, good tusks, projecting tongues, cloven feet, and are spotted. They are gorged and chained. Their attitude is not graceful, being affected by their confined position in the circular panel. Close by, another of Henry VI.'s beasts appears in window glass; it has a goat's beard and tufts of hair on the body as on the Jalls at Hampton Court, serrated horns which fall over the back, tusks and spots.

The first and most important of the ecclesiastical examples of this type are those in Henry V.'s chantry chapel at Westminster, and about which there has been much discussion. These beasts are, of course, on a different footing to the supporters. They are lying down—a usual, but not universal, attitude. They have serrated horns, pointing backward, cloven feet, tufted tails, and well-defined boar's tusks. One of each pair appears to have its mouth slit further up than the other. They have sashes or banners tied round their necks, with the Fleur-de-lys and Lions of France and England. Other examples occur on the porch of Cirencester Church and on a corbel on the north side of the nave at Tring. There are also good examples on misericords. It is probable that King Henry's beast at Westminster set the fashion for these antelope-like beasts. In all these instances the horns approximate. They are not natural antelope horns, but the horns of the antelope of the Bestiary.

The name in the Latin Bestiaries in Antalops, with variations of spelling. The description is practically common to all, with more or less elaboration of detail. It runs as follows:—"There is an animal which is called antelope of such exceeding swiftness that the hunter cannot possibly approach it. It has moreover long horns after the semblance of a saw, so that it is able to cut down lofty and great trees

and cast them to the ground. But when it is thirsty it goes to the great river Euphrates, and there is a bush which is called in the Greek language heather, having tender and wide-spreading shoots, and it begins to make play with its horns in the bush, and while it plays it catches its horns in the shoots. The hunter, hearing its cry, comes up and kills it. So also art thou, O man, who strivest to be sober and chaste and to live a spiritual life; whose two horns are the two Testaments by which thou wilt be able to cut off and destroy all vices bodily and spiritual. Beware of drunkenness, lest thou be entangled in luxury and vice and be destroyed by the devil."

Ecclesiastical carvings of this story are scarce; but at Manchester there is a misericord which shows the antelope sawing down a tree or possibly with its horn entangled. Upon a bench-end at Sefton (Lancs.) are two antelope-like beasts; the larger one with horns is feeding on a bush, the other skips about behind. At Ripon upon another misericord there are two good antelopes in a very excited state.

Unlike the Eale, it is as yet apparently impossible to carry the history of Antalops back beyond the Bestiaries. Pliny says nothing about it, although he refers to antelope's horns.

The old Heralds adopted the system that was employed in the Bestiaries, but extracted from the story a heraldic instead of a religious or moral signification. Thus Sir Wm. Cummys, who was Lyon King-of-Arms in 1512, in his "*Liber Armorum*," says:—"The antelope is so nimble by his swiftness he is called the flying one, and is right brave, so that no man may overtake him, for his horns are so great and in the manner of a saw which shears and breaks all nets and cuts the great trees. But sometimes it happens that he goes to drink in the flood of the Euphrates, where there is a bush. . . . And this signifies that the knight that bore him was foremost in arms and was strong, light, and virtuous, and of his might, so that evil had no domination above him. And there was neither subtilty nor force where through his enemy might vanquish him; but when he took his nouriture and drinks that was convenient till him, he occupied him to put away from him weak folk and not mighty in which he was so demoralised that he was taken, and then his enemies ran on him without pitie or regard reasonable." This taught the lesson that a brave knight should seek worthy foes or he will degenerate and come to grief.

Taking the points of the two beasts as a whole, there is much in common between the two. Both more or less resemble antelopes; both have boar's tusks, and do not have them; both have spots and no spots, the triple-ended tail is found on both, likewise tufts on the body. The principal difference is in the horns. The heraldic antelope was not intended for a natural beast, quite the contrary. In composing it the Heralds gathered up such details from both Eale and Antalops of the Bestiaries as they thought would make up a beast which would be distinct from any other heraldic beast, antelope or otherwise. The result is that we have a common body with a combination of the horns of Antalops and tusks of Eale. How did the Jall's name drop out so completely? When you concoct a composite beast out of two or more you may be sure that you will not have equal parts of each. Now in the case of the heraldic antelopes the horns are a much more prominent feature than the tusks, and this, coupled with the preconceived ideas of the Heralds that both were antelopes, would cause the antelope element to outdo the Jall element, and they would naturally be called heraldic antelopes. This tendency would further operate against the Jall, for the carvers, not understanding the source of the tusks, got to regard them in many cases as superfluous appendages, and left them out altogether.

Although there does not seem to be anything about the Jall in any heraldic treatise its reputation is clearly established by the correspondence between the Beaufort Garter-stall plate, seals, and the Beaufort arms over the gateway of Christ's College, Cambridge, and the illustrations and text of the Bestiaries; in other words, it is the same as the Eale. As to the antelope-like beasts with tusks such as are in King Henry's Chapel and elsewhere, it may be inferred they have Jall blood in them, and that they got their tusks from that quarter.

THE President of the Royal Society of Antiquaries of Ireland, Dr. Robert Cochrane, I.S.O., F.S.A., F.R.I.B.A., Inspector of Ancient Monuments for Ireland, had the honour to receive, and has accepted, the invitation of the Earl Marshal to be present at the ceremony of His Majesty's Coronation in Westminster Abbey.

THE TESTING OF PAINT AND VARNISH.*

IN giving a paper before a Society like the Paint and Varnish Society, which embraces amongst its members men who make, men who sell, and men who use paints and varnishes, it is most difficult to choose a subject which will appeal to each of the three sections of the trade.

If one treats the subject from a chemist's point of view it would be incomprehensible to the ordinary master painter whilst on the other hand, if looked at from the point of view of the user, it would, to say the least, be uninteresting to the manufacturing chemist. In my remarks this evening I shall endeavour to take the middle course, and my hope is that something in this paper may be found of interest to all present.

It has been said that it is a pity that the master painter was not an analytical chemist so that he can detect the wrong in the materials that come to him—but if he were such he would likely command too high a salary to be content to remain a painter, besides not having the time to devote to analysis in his business.

A great number of the large corporations and railway companies now employ a qualified chemist whose duty it is to draw up specifications for everything used in the paint line, and manufacturers must conform to these, regardless of their own experienced practical painter's opinion.

I consider that the results are no better in these cases, and instances are not wanting where absurdities occur. If the chemist is the painter's assistant then all is very well, but if he is his dictator, he has dangerous power. The chemist's analysis usually can only relate to the small sample before him. The next lot from the same source may be altogether different. He can only determine the percentage of adulteration by dissolving the solids, or by getting at the nature of destructive liquids. So far, so good; but does he look at the sample from the progressive painter's practical point of view? He can tell you what the sample contains, but in most cases knows nothing of what the article will or will not do.

If the users of paint and varnish were to see that they obtained their goods from first-class firms I do not think that they need have much fear but what they get good value for their money. Unfortunately, there are a number of painters and decorators who are always trying to get something for nothing, and their continual cry is "Haven't you got something cheaper?"—and you can hardly blame the manufacturer if he is induced to cater for this demand. What the purchaser seems to lose sight of is that in most cases where he gets the price of an article lowered he also has a reduction in the quality.

I think that a thoroughly experienced painter can safely be left to himself to determine whether an article is good or bad. He must use his five trained senses, namely, sight, feeling, hearing, taste, and smell, and best of all, his common sense. There will be use for all these. There will, of course, be much for him to see. He will also feel under the brush how a paint or varnish works better than anyone else can describe it; he can feel grit in his putty or paint, and if he will rub some on a piece of glass, he will hear it. He can taste linseed oil for purity, and if he detects nothing that way he may smell fish oil and resin oil if he warms it slightly. He may smell benzine in paint and varnish, and by comparing notes on all these things with sober reflection devoid of prejudice, he may be trusted to arrive at a safe conclusion. After all, it does not matter a little bit to him as to what the paint or varnish contains so long as it does what he requires it to do.

Many things are now used in the manufacture of paint and varnish which a few years ago were thought to be detrimental, and only to be used as adulteration. Barytes and resin, I think, are perhaps the chief. To-day these articles are amongst the most useful that a manufacturer has to handle. Science has shown how to use them, and in the case of resin, when properly treated so as to get rid of the free acid, you cannot have a more useful gum. A number of very useful varnishes on the market to-day contain a large percentage of this article, and in Germany especially, even high-class varnishes now depend on resin instead of such gums as kaurie. This has largely been brought about by the introduction of Chinese wood oil, and I am myself to-day making varnishes with this oil which have been proved to stand as well as, if not better than, those made on the old lines; but I am afraid I am getting rather wide of my subject.

Tests for determining the relative merits of painting

* A paper read by Mr. W. F. Nicholson, on June 15, before the Paint and Varnish Society.

materials may naturally be divided under three general heads, namely, chemical, mechanical, and physical.

Chemical Tests.—I have already endeavoured to show that it would not help the master painter if he were able to analyse his paints and varnishes, so that this heading is of interest to the manufacturer only, whose chemists are trained for that purpose. There is no reason, however, why any right young foreman painter, with leisure moments, may not master some useful chemical tests of paints and colours. He will find plenty of these set out in the numerous text books that are published.

Varnish, however, is locked up in its manufacture beyond the reach of chemical dissolution to determine its component parts. Here his sight and sense must come into play as he examines and works it.

Some chemists recommend the polarimeter as a test for the presence of resin oil in varnishes—its high power of right handed rotation contrasting with the inertness of mineral oil and fatty oils shows that, with the exception of croton oil and resinous oil, the only dextro-rotations are produced by sesame and olive oil—all others, including linseed oil, being either inactive or having a slight laevo-rotatory power.

Another instrument used is the refractometer, by the aid of which even small quantities of resin, resin oils, metallic sesquiterpenes, and mineral oil can be detected.

Mechanical Tests.—The skilful painter can make these as well as, if not better, than anyone else. One whose eye, hand, and arm are skilled by use can determine the working qualities of paint and varnish as no one else can. Manufacturers realise the importance of this, and usually employ men in their works, or on the road, a thoroughly practical painter in order to obtain those results for which they seek, for the working qualities must be had whether an article is pure or not.

It is of the utmost importance that wood, iron, steel, and other surfaces to be painted should be in a fit condition to receive the paint, in order to determine the merits or demerits of an article of paint to be used upon it. Atmospheric and other local conditions must also be taken into account.

A mistaken idea seems to prevail amongst some painters that if they put a sample of paint on a piece of tin and leave it to dry, and the paint does not crack on the tin being bent backwards and forwards it must be good. They should know, and everybody else by this time, that any paint will do that while it retains its elasticity. Any paint not mixed with gold size and turps can be bent backwards and forwards on tin without cracking or flaking for some time after it is dry, out of course the longer when mixed with boiled oil, because it retains its elasticity longer.

A good mechanical test is to apply paints side by side on glass to get at their fineness, comparative covering and drying power. Used carefully in the same proportions and held up to the light, the glass will reveal their covering strength, and if the paint will dry there where there is no absorption, it can be relied upon to dry anywhere.

Liquids also applied on glass and allowed to dry will reveal something of their nature, whether brittle or tenacious. I have found glass used in this way to be a valuable aid in looking into the practical nature and worth of materials for the painters' use.

Physical Tests.—By this is meant tests by exposure to the destructive forces of the weather, light, darkness, &c., or to any agencies that paint or varnish must meet with in its use, that tend to shorten its life, such as acids, or alkaline gases and vapours. Comparative tests on small plates of steel are often very unreliable, because a painter can hardly gauge his work fine enough with all kinds of materials, and then unless a separate and clean brush is used for each brand of goods to be tested, the test is worthless.

It is easy to tell whether a paint is waterproof or not, but such tests only settle its ability to exclude water from the outer surface on that which it is intended to protect. Should water enter wood from the back a waterproof paint will blister and peel, while a non-waterproof paint will not. Besides, a paint may be perfectly waterproof when first put on, but it has recently been proved that electricity in the atmosphere has a very great effect on paint, causing it to contract, and leaving very fine pin holes into which the wet eventually finds its way.

I will now endeavour to deal shortly with some of the chief articles used by the painter, and I think perhaps linseed oil could be considered first.

Owing to the present high price of linseed oil, a great variety of substitutes made from mixtures of various oils have been put upon the market. They have a certain field of usefulness in the manufacture of cheap low-class paints

and compositions, but are not to be compared with genuine linseed oil for certainty of drying and durability when applied in the form of paint. I am purposely omitting any remarks on Chinese wood oil, soya bean oil, &c., as these are comparatively new oils, and, being somewhat difficult to handle, are used only by a small number of manufacturers and those who have found out how to manipulate them guard their secrets very closely.

It is well to examine all so-called linseed oils, and to determine their purity; this can be accomplished in several ways.

A simple test is to heat some oil in a glass retort, and if on examination it has become of a greenish tint, it may be assumed that the oil is pure. Another simple test for the presence of resin or mineral oil is to boil a small quantity with an alcoholic solution of caustic potash until it is completely saponified, then pour the solution into water; if the oil is pure a clear mixture will be obtained; if it contains either of the oils named, it will be cloudy and turbid.

The specific gravity of linseed oil is a most useful indication of purity. It may be determined with a hydrometer, or more accurately by means of the specific gravity bottle or chemical balance, or an instrument called Westphal balance. The latter two methods can only be conveniently used by chemists in the laboratory, as the instruments are expensive.

Linseed oil has a specific gravity varying from .930 to .937, according to the different methods of extraction and locality from which it comes. If the gravity is less than .930, adulteration with fish, seed, or mineral oils would be indicated, while if the gravity exceeds .937 then a mixture with resin oil is very likely. Again, boiled oil has a specific gravity averaging about .945; if much heavier than this it is quite likely that resin oil has been mixed with it, while if below .940, then other fatty or mineral oils may be looked for.

(To be continued.)

MANCHESTER SOCIETY OF ARCHITECTS.

THE luxuriant and wooded country of North Cheshire is extraordinarily rich in domestic architecture of that prolific timber-building time, the fifteenth and sixteenth centuries, and has also some interesting examples of a vernacular of church building all its own of the same period. Fine as the half-timbered halls are, the later Georgian halls, of which there are not a few, vie with them in interest and often surpass them in real architectural qualities.

During two visits made last week by the Manchester Society of Architects each type has, as it were, undergone review. On Tuesday Wilmslow was visited. The church has a typical Cheshire tower, and the interior possesses a dignity which seems due largely to the simplicity of the stonework and to the ranges of squareheaded windows with their deep internal splay, as well as to the stateliness of the rood screen by Bodley; this and the rich old roof contrast finely with the crude stonework. Hawthorn Hall, with its multitude of gables and its quaint octagonal turret on the roof, makes a striking group, and some good Georgian panelling and a fine staircase were found inside.

On Saturday Adlington Hall was visited. The older half-timbered portion, forming two sides of the main quadrangle, contains the great hall, with its splendid open timber roof, its huge mullioned windows, and the beautiful eighteenth century organ upon which Handel performed. The organ case and gallery is of exquisite workmanship and design. The later Georgian wing, a vast addition made in 1741, has all the breadth and symmetry of its period, but though the handling of the masses is clever, there is a touch of awkwardness that suggests an amateur rather than a master hand; but even the stiling of the columns of the great portico in a manner which ruins their proportions is to some extent compensated for by the beauty of the colouring, and the smaller stable building, as a piece of formal architectural composition, surpasses the more ambitious hall.

THE EDWARDIAN WALLS AND ELIZABETHAN RAMPARTS OF BERWICK-ON-TWEED.*

BERWICK-ON-TWEED is the best walled town in England, the only stronghold in the United Kingdom with the curtain-and-bastion system of defence, and the sole fortification in the world with the open quadrangular areas known as flankers. The nation is fast realising that the strenuous

* Address given by the Rev. James King, M.A., B.D., at a general meeting of the Northumberland County Association of the National Union of Teachers, held at Berwick-on-Tweed, on June 10.

military episodes in the stirring history of the sister kingdoms of England and Scotland may largely be found written in her decaying walls and famous ramparts; causing Berwick to take rank as one of the most interesting towns of the land. The colossal fortifications are the outcome of the Scottish wars of independence, the religious upheaval of the Reformation, the Jacobite rising of 1745, and the threatened invasion of the French in 1804. The illustrious personages, therefore, who caused the town to assume its present form were David I., the most pious and the most beloved of the long line of Scottish kings; Edward I. of England, the greatest royal statesman, and mightiest of the Plantagenet dynasty; Mary Stuart, Queen of Scots, the ill-fated rival of Queen Elizabeth; Charles Edward Stuart, the Bonnie Prince Charlie of Jacobite song; Napoleon Buonaparte, the world's greatest warrior, and the dread of Europe for twenty years. The proud words of the Hebrew bard—"walk about Zion and go round about her, tell the towers thereof, mark ye well her bulwarks, consider her palaces that ye may tell it to the generation following"—are peculiarly appropriate to this ancient fortress, which more closely resembles Jerusalem than any other place in the kingdom. The town is hoary with the age of eight centuries, being first mentioned about the time of the Norman Conquest. In Saxon times the territory of Bernicia extended from the Tyne to the Forth; and for 400 years Bamburgh continued to be the royal capital of this extensive district. About fifty years before the Norman Conquest, namely, in 1018, Malcolm II., the Scottish king, gained a victory at Carham over Eadulph, Earl of Northumberland, and, according to a treaty made after the battle, the Merse and Teviotdale were assigned to Scotland, and the River Tweed became the southern boundary of the Scottish nation; and, amid all the changes and vicissitudes of time, this noble stream, extending from Carham to Berwick, has continued to be the dividing line between the sister kingdoms for 900 years. The castles of Wark, Norham, Bamburgh, &c., soon rose to be fortresses on the south side of the river, while Berwick first emerges from the darkness as a boundary town on the north bank, with a stronghold on Castle Hill, a spot subsequently much noted in the history of the two nations. The Norman Conquest of 1066 affected the history of Scotland, for when the Saxon struggle for freedom ceased by the onward victorious march of the Conqueror many Saxons took refuge in Scotland. Among them was Edgar Atheling, heir of the Saxon dynasty, together with his mother, Agatha, and his royal sisters, Margaret and Clementina. Malcolm III., known as Malcolm Canmore, welcomed the royal exiles to his palace at Dunfermline, and becoming enamoured of the princess Margaret took her to wife, thus knitting together in closer friendship the Saxons and the Scots. All historians bear testimony to her exalted character. Freeman says:—"It was a good day for Malcolm and for Scotland when she became Queen, for she was the mirror of wives, mothers, and queens, and none ever more worthily earned the honours of saintship;" while Skene testifies "there is, perhaps, no more beautiful character recorded in history than that of Margaret." She was afterwards canonised, and St. Margaret became the female patron saint of Scotland. King David I. was her son, and seems to have inherited both the piety of his mother and the generous spirit of his father. In youth, he spent many years at the English court of Henry I., who had married his sister, Matilda, a circumstance that had a refining influence on his character, and brought him into contact with many Norman nobles. He thus became acquainted with St. Bernard of Clairvaux, a most saintly man, and the prince of monastic hymn writers, who earnestly proclaimed the high honour and deep devotion that ought to be paid to the Blessed Virgin Mary. David was much impressed with his teaching, and on his becoming Prince of Lothian he built a church near his royal residence at Berwick and dedicated it to St. Mary; probably the first sanctuary dedicated to her in the north, and still represented by St. Mary's Church in Castlegate. He became King of Scotland in 1124, and his long, prosperous reign extended over nearly thirty years. Like his Hebrew namesake, David, the sweet singer of Israel, he had an ardent desire to worship God in the beauty of holiness by building religious edifices throughout his kingdom. Thus, in this district, the grand old abbeys of Jedburgh, Kelso, Melrose, and Dryburgh, the decaying ruins of which are now the chief glory of the Scottish Borders, were founded in his reign and dedicated to the Virgin Mary. From David's reign, Berwick continued to grow in size and importance for 150 years, and attained to such high commercial prosperity that it was accounted the greatest merchant city of the north. With the accession of Edward I., however, dark days

were in store for Berwick. In 1286 Alexander III., while riding in the dark on the rocky shore of Fife, his horse stumbled, and he himself was thrown over a cliff and killed on the spot. The heiress to the throne was his granddaughter, Margaret, who was married to Eric, King of Norway, and known as the Maid of Norway. On her sudden death in 1290 there sprang up twelve claimants for the Scottish throne; and Edward I. of England was appointed arbiter, and heard their claims on the haugh by Tweedsid opposite Norham Castle. Subsequent meetings were held at Norham church and the Dominican chapel by Berwick Castle. The ambitious king made the competitors take an oath that they would acknowledge him as feudal superior or overlord of Scotland. At length John Balliol and Robert Bruce were selected as the most eligible candidates, and were accordingly summoned to the final meeting, held in November 1292, in the great hall of Berwick Castle, where with royal pomp and in the presence of the Scottish parliament and the aristocracy of the two kingdoms Edward gave his decision in favour of John Balliol. No such scene of royal splendour has since been witnessed in Berwick, and no meeting has produced such momentous issues on the welfare of the town and the destinies of the Scottish nation. Balliol did homage to Edward as his vassal "for the whole kingdom of Scotland," but after an inglorious reign of four years, being highly indignant at the repeated arrogance of his Lord Superior, he determined to withdraw his allegiance, and aid his subjects in throwing off the English yoke. On hearing of Balliol's defiance, Edward, in great rage, thundered—"The felon fool! If he will not come to us, we will go to him;" and forthwith, with a large army, marched northwards to punish the rebellious Scots. In March 1296 he besieged Berwick-on-Tweed, then the greatest sea-port in Britain, and the "Alexandria of the North." The defences of the town on the land side consisted of merely a stockade and a ditch so low and narrow that Edward leaped over both on his horse, Bayard, and, full of fury, entered the town at the head of his army, and, according to tradition, butchered 8,000 of the unresisting citizens. A terrible blow was inflicted on the place, and Green, the historian, says:—"The town was ruined for ever, and the greatest merchant city of northern Britain sank from that time into a petty seaport." For the defence of the town Edward determined to dig a deep and wide fosse around its eighty feet broad and forty feet deep. Balliol made an object submission, resigned his crown, and was sent prisoner to the Tower of London. The English king then took possession of the Scottish castles, swept over the country with his plundering forces, and carried back with him to England the crown, the sceptre, and the famous Lia Fail, or "stone of destiny," on which for four centuries the kings of Scotland had been crowned in the abbey church of Scone. This ancient relic was sent to Westminster Abbey and fitted into a chair, which has ever since been used as the Coronation chair of the kings of England. For ten years, from 1296 to 1306, there was no Scottish king, although a seven years' conflict was waged against the revolting Scots under William Wallace; and it was at this period that Edward constructed the fosse, vallum, and defensive walls of Berwick, his mightiest stronghold in the north. The king was not only a successful conqueror, but also a shrewd statesman, and historians regard him as the mightiest of the Plantagenets. His treatment of Wallace is, however, a blot on his memory, for that patriot was barbarously put to death, his head fixed on London Bridge, his body divided into four quarters, which were sent to be exhibited in Berwick, Newcastle, Perth, and Stirling.

In March 1306 Robert Bruce, Earl of Carrick, was crowned King of Scotland. The crown was placed on his head by the Countess of Buchan, for which offence she was afterwards exposed in an iron cage on the walls of Berwick Castle. Edward swore to take vengeance upon Bruce, and, marching in haste northwards with a large army to ravage the patrimony of Bruce, and take vengeance on the rebels, he died suddenly at Burgh-by-Sands on Solway Water, within sight of Scotland, on July 3, 1307. Edward II., son and successor, was a weak, frivolous prince, with none of his father's mettle. Bruce was almost everywhere successful; but twice he attempted to take Berwick without success. Here the king assembled an enormous army of a hundred thousand men, who lodged in tents in the fields outside the town, and on a bright morning in June 1314 marched out of Berwick in battle array; but a few days after, this mighty force, through the consummate skill of Bruce, was completely defeated at the battle of Bannockburn. Edward rode with speed to Dunbar without halting, and thence took ship to Berwick, which continued to remain in the hands of the

English. It appears from the Lanercost chronicle that in 1166, two years after the battle, King Robert Bruce, with Scottish army, approached Berwick and attacked the town on the river side between the Bridge House and the Castle, where the walls were not yet built; from which statement it is evident that the masses of masonry on the steep bank overlooking the Tweed were not the work of Edward I. Two years later, in 1318, the Scots successfully attacked the town, and Bruce resolved to preserve Berwick as his chief border fortress, and for its better defence strengthened and heightened the Edwardian walls. He probably also built the walls on the river bank, large decaying fragments of which still exist. The accession of Edward III. to the throne of England was the harbinger of a dark era for Berwick.

Bruce died at Cardross in 1329, and was buried at Dunfermline, while his heart was laid to rest before the high altar of Melrose Abbey. His son, David II., was only a child, and Edward Balliol, son of John Balliol, claimed the throne, and, his claim being supported by Edward III., an English army moved northwards to attack Berwick. The Scots met them at Halidon Hill, near the town, but, rashly attacking them on a rising ground, were completely defeated in July 1333. Edward, greatly elated with the victory, devoted 20l. a year to the Cistercian Nunnery of St. Leonards at the bottom of the hill. After the battle the town capitulated, and the Earl of March, keeper of the castle, took the oath of fealty to Edward, and was received into royal favour. Henceforth Berwick virtually became a permanent possession of England. Throughout his long and prosperous reign, extending over half a century (1327-1377), Edward III., distinguished as a great military monarch, regarded Berwick as his chief fortress in the north, and much time was devoted to the extension and strengthening of its fortifications. The water tower by the Tweed, and fragments of strong masonry, lately exhumed by the old post office, probably belong to his period. For more than a century the history of the town is of little importance, but it again rises in fame as a border fortress on the accession of the stately Tudor dynasty.

A minute survey of the old walls was made in the reign of Henry VIII. in 1545, and a report, made in 1547, shows that they were much in need of repair, and during the six years of Edward VI.'s reign vast sums were spent on the fortifications, and the restoration was carried on also in Queen Mary's reign. On the accession of Queen Elizabeth in 1558 the work was pursued with renewed vigour, for the following reasons:—The Pope had opposed the divorce of Katharine of Arragon from Henry VIII., and the King's marriage with Anne Boleyn was declared to be null and void. Elizabeth, the offspring of the forbidden wedding, was proclaimed by the Pope to be illegitimate, and Mary Stuart, Queen of Scots, was recognised as having a valid claim to the English throne. Mary, therefore, assumed the title of Queen of England, and Elizabeth, on hearing of this, became greatly alarmed. Engineers and workmen were forthwith despatched to Berwick to carry on with renewed energy the strengthening of the fortifications. After carrying on the work for two years the engineers came to the conclusion that the effectual restoration of the decaying walls, extending as they did two-and-a-half miles, was too gigantic a task, and as the northern part of the town (now St. Mary's parish) was sparsely peopled, they suggested to Elizabeth's government that the old Edwardian walls should be abandoned, and a new system of fortifications introduced, enclosing a smaller enceinte than formerly. The suggestion received royal sanction, and two Italian civil engineers were sent to Berwick to view the situation, and help in determining the circuit of the proposed defensive works. The abandoned walls must have furnished an enormous amount of stonework for building purposes, for they extended for two-and-a-half miles, were 22 feet high, and strengthened by nineteen towers. The Edwardian masonry was entirely composed of sandstone of various tints, from deep red to pure white; and much of the sandstone ashlar stonework found in the present masonry probably belonged originally to the Edwardian masonry, such as the stones of the masonry of the eight flankers, &c. The new fortifications, known as Queen Elizabeth's ramparts, were carried on with much vigour, for there existed great dread of a national revolution in consequence of the Reformation, which caused a change of religion from Roman Catholicism to Protestantism. The Italian system of fortification, known also as the "bastion-and-curtain system," was adopted, and the work completed in the course of six years—from 1560 to 1566. A bastion is a projecting pentagonal fort at the corner of a rampart, with two sides, called faces, opposite the enemy, and two sides, called flanks, facing the fosse. The small bastions of Verona,

built in 1523 A.D., are regarded as the oldest extant. The name curtain is applied to that part of the ramparts between two bastions, and is derived from Latin—*cortina*, a court, and is so named because it forms with the flanks of the bastions a kind of court or enclosed space. In Berwick the exterior masonry of the curtain wall has now a pronounced slope or batter. The masonry is good, well jointed ashlar work, and, having been renovated from time to time, is now in good condition, and shows little symptom of decay. The Berwick ramparts consist of three bastions, two demi-bastions, a shallow fosse, and a strong curtain wall, backed and surmounted by a huge earthen mound. The terminal bastion, facing the Tweed, is called Meg's Mount, perhaps named in honour of St. Margaret, Scotia's favourite queen, or from the Greek—*mega*, big, as in Mons Meg, a big gun in Edinburgh Castle. The Middle Mount Bastion, facing northwards, is mid-way between Meg's Mount and the Brass Mount. It is called the Cumberland Bastion, probably from the Duke of Cumberland, who defeated Prince Charlie at Culloden in 1745. The Windmill Bastion, fronting the sea near the barracks, is in excellent condition, mounted with guns, and used as a practising battery by the Militia. The King's Mount, facing the cricket field, the terminal bastion on the seaward side, was formerly called Hunsdon's Mount, from Lord Hunsdon, cousin to Queen Elizabeth, and Governor of Berwick when the fortifications were made. Vauban, Marshal of France under Louis Quatorze, was one of the world's greatest military engineers, regarded as the highest authority in the science of fortification. The Berwick walls were completed a century before he reached the summit of his fame, although they bear a striking resemblance to his system, the Italian method known as the "curtain-and-bastion" system. In the pursuit of his studies he probably visited Berwick, the only bastioned town in the kingdom, the defences of which were reared under Italian engineers about one hundred years before Vauban published his great work on fortification. Flankers is a local name applied to the open quadrangular areas found in the Berwick ramparts at the corners where the bastions approach the curtain wall. They, however, find no place in his methods, and the question arises for what purpose were they constructed in our walls. With the exception of the Italian towns of Lucca and Verona, which possess somewhat analogous open areas, the flankers of Berwick are unique, and ought to be regarded with special interest. James I., Charles I., and Cromwell visited Berwick, and showed much interest in her walls. The barracks were built after the first Jacobite rising in 1715, and the Town Hall after the second Jacobite rising of 1745 under Bonnie Prince Charlie. William Temple, the then Mayor, was grandfather of the late Archbishop Temple. From 1761 to 1770 the walls were almost completely rebuilt, including the quay walls and gates, together with the saluting battery. During the French revolution the flankers were converted into batteries, and the present pier was finished in 1821.

The famous towns of antiquity were often built on hills for defensive purposes, and further fortified by encompassing walls. "O thrice and four times happy they who had the good fortune to die before the lofty walls of Troy." Ancient Athens reached its highest glory under the famous Pericles, who built its Long Walls; and of the eternal city of Rome Cassius exclaims: "When could they say that talked of Rome that her wide walls encompassed but one man?"—while the colossal fortifications of the Holy City are the theme of the lofty language of the Hebrew bards—"Pray for the peace of Jerusalem: they shall prosper that love thee; peace be within thy walls, and prosperity within thy palaces." The view of the eastern wall of Jerusalem, facing the Mount of Olives, as seen from the Garden of Gethsemane in the Kedron valley, greatly resembles the view of Berwick's lofty ramparts as they appear from the valley of the Tweed. No hills stand around our borough, but encompassed as it is by Tweed's fair stream and the blue waters of the ocean, "this precious gem set in a silver sea" is beautiful for situation; and begirt as it is by the crumbling Edwardian walls and the colossal Elizabethan fortifications, Berwick-on-Tweed can boast of being the best-walled town in the United Kingdom.

THE Bishop of Exeter recently consecrated the Lady-chapel built from plans by Mr. W. D. Caroe of a new church at Stoke Damarel, Devonport. The Lady-chapel is the first section erected of the church, and with it are included two large vestries and a sacristy. This section has cost about 5,000l.



[The Editor will not be responsible for the opinions expressed by Correspondents.]

German Friendship.

SIR,—In connection with the Annual Conference of the Institution of Gas Engineers, now being held at Glasgow, an exceedingly pleasing incident at the luncheon in the City Chambers, over which the Lord Provost, the Hon. A. McInnes Shaw, presided, was the presentation of a beautifully designed and mounted president's hammer and striking board, sent by the German Association of Gas and Water Engineers, with a letter, of which the following is a translation.

The gift was received with great appreciation, and was suitably acknowledged.

The President and Council of the Institution would feel very glad if, by your courtesy, the letter could be inserted in your next issue.—Yours faithfully,

WALTER T. DUNN,

Glasgow and West of Scotland Secretary.

Technical College, Glasgow:

June 14, 1911.

COPY OF LETTER.

GERMAN ASSOCIATION OF GAS AND WATER ENGINEERS,
Karlsruhe, June 7, 1911.

Mr. Alexander Wilson, President,

The Institution of Gas Engineers, Glasgow.

At the end of the Institution year, the German Association of Gas and Water Engineers remembers with pleasure and gratitude the visit made by eighty of its members to the British Brother Association—the Institution of Gas Engineers—in October 1910.

We have acquired valuable knowledge in the department of our professional activity from the brilliantly conducted gasworks of London, Edinburgh, and Glasgow, which take a high rank in technical efficiency. The days we were together showed us how strong were the feelings of friendly relationship between our two great technical societies, and they emphasised also the friendly relationship between the citizens of our two great nations. We separated with the firm resolve to contribute our part to the further exchange of technical knowledge and to the ever-growing good understanding between our nations.

At festive gatherings we have become acquainted with the British custom of striking the table with a hammer to call for silence for the expression of serious, festive, friendly, or humorous ideas. So when we endeavour to give formal expression of our thanks for all the kindness offered us by the Institution of Gas Engineers by sending a president's hammer with plate, made by the Karlsruhe artist, Professor Hoffacker, it is our wish that the hammer may always secure attention for words that will contribute to the peaceful greatness of the nation, to the advance of our great gas industry, which is a benefit to all, and will also awaken the recollection of friendly relations with our German Association of Gas and Water Engineers. We request you, Mr. Alexander Wilson, the esteemed President of the Institution, to accept this offering and to hand it to the Institution of Gas Engineers at their meeting, along with our greetings and our sincere thanks.

By order of

The German Association of Gas and Water Engineers,
the Committee of Management.

(Signed) H. PRENGER, President.

HANS BUNTE, Honorary Member of Committee.
KARL BUNTE, General Secretary.

Old-Time "Travellers' Rests."

SIR,—Your correspondent "Wayfarer" has roused in me no little vexed interest, for in his letter which appeared in your last issue he gives a detailed account of an old "Travellers' Rest" on the Worthing to Arundel road capable of seating eight or nine persons. Now, I consider myself on the strength of a twenty-odd years' acquaintance fairly intimate with this corner of West Sussex; but that small, round building in a turning off the main road has hitherto eluded me. And not only myself, but other people also, who often use that delightful road from Arundel to Worthing, are equally unable to say at what point along those ten or twelve miles it is to be found. One shelter along it I certainly know. It is about mid-way, and stands picturesquely just up a side road, but within view of the main highway. This, however, is more old-time in suggestion than in fact. The cross on the apex of the wooden roof, together with the

shield bearing a mutilated cross on the outside of a cross timber, give it something of a mediæval look, though it is a spurious one. For here is the inscription:—"In thankful memory of the recovery from a serious illness in the soft Worthing air of one who was too (good) for this world, and had no greater fault. This shelter was placed here in 1884." (The curious adjective is clearly decipherable, though erased.) The straight bench would be incapable of accommodating more than four people, and the roof is not umbrella shaped like that described by "Wayfarer," but pointed. It certainly bears one resemblance, viz. the number of names and dates which have been foolishly inscribed on it. There are a good sprinkling of travellers' rests along the road in question, but they bear such names as "The Horse and Groom," "The Fox" (this surely commemorates a unique occasion when the Horsham and Crawley Hounds actually discovered a fox in this part of their country), "The Woodcutter's Arms," and so on. However, the existence of these and their like in such numbers all over Great Britain has removed the necessity for and alas! destroyed the love of Old-Time "Travellers' Rests."—Yours sincerely,
June 18, 1911. WEST SUSSEX.

SIR,—I feel much interested in "Wayfarer's" letter in to-day's *Architect*, because it was only last Sunday, in a drive from Mundon to Cold Norton (two little villages in the south of Essex) that I came across one of these seats upon which is carved "Rest and be thankful." It was rather gruesome, though, for it was placed round an old dead tree, with its withered extending branches, making a remarkable contrast to the beautifully foliaged trees all round. It stands in the middle of four cross roads, and this tree is the old gibbet. It struck me as being rather funny to invite people to sit under the branches of this gruesome thing, and "Rest and be thankful." One almost wonders if the poor gibbeted creatures were invited to be "thankful" for the ignoble rest into which they were so suddenly hurled.—Yours faithfully, ANOTHER WAYFARER.

Garden Suburbs: A Warning.

SIR,—As a member of the Garden Cities and Town Planning Association and a strong supporter of the Town Planning movement, I should like to point out a great danger into which those may fall who are in other respects so ably contributing to the realisation in practice of Mr. Howard's ideals.

If we are not very careful, the rush of modern business—I mean the tendency of the modern man to rush a thing through—will take us by the scruff of the neck and dump us into the pit of disaster. We must exercise great caution in dealing with our land, lest the development of it result in a mere jumble of well-planned and well-built houses. A thoughtless and hurried mixture of units, however well designed in themselves, will only produce a feeling of restlessness and destroy the dignity of the whole. Unless care and thought is given to the relation of each particular unit to the whole, the result will be a botch. Let us work as business men, but let us not allow consideration, care, and the sense of fitness to lapse totally into oblivion.—Yours, &c.
O. NEWBOLD.

The Passing of the Jerry Builder.

SIR,—Will you permit me to take a liberty with Shakespeare?

I come to bury Jerry, not to praise him,
The evil that men do lives after them;
The good is oft interred with their bones;
So let it be with Jerry. . . .

There is many a Brutus ready to prove his own virtues by pointing out Jerry's grievous faults; and grievously hath Jerry been punished.

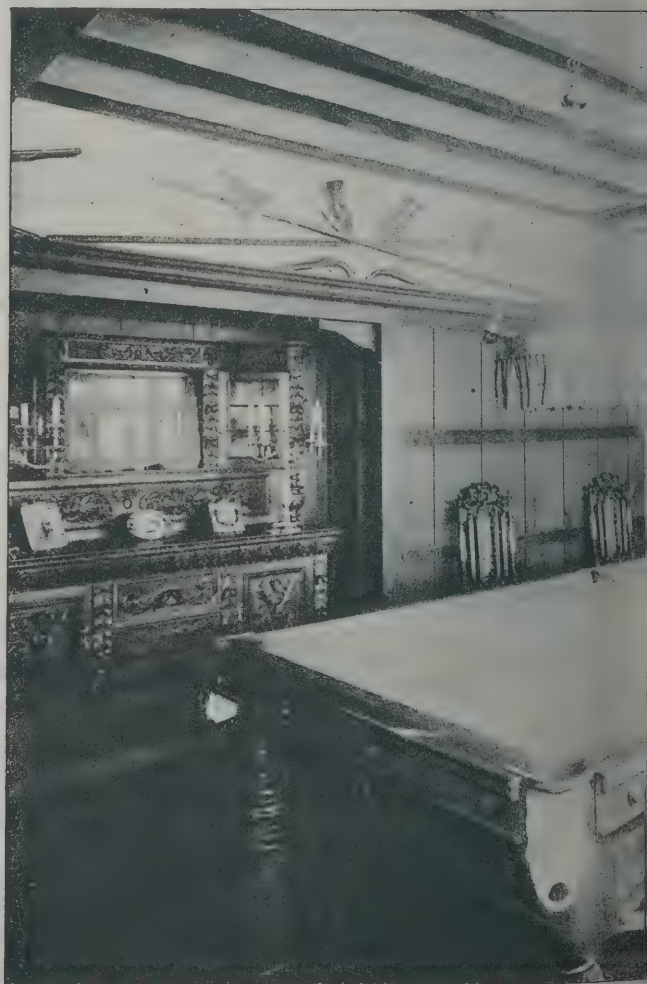
(For Brutus is an honourable man,
So are they all, all honourable men.)

It is easy, certainly it is respectable, to hold the jerry-builder up to scorn, to paint him as a thieving incompetent, as a gross octopus whose tentacles squeezed out the artistic life of craftsmanship. Sir, he was no worse than a mirror of the times, an answer to contemporary demands, a man trying like you and I to make a livelihood (even to establish a competence), and often and often did he sorely fail. His line of least resistance towards success was to give the public what they were accustomed to, and what they seemed to want. His percentage of profit was usually too meagre to allow an architect to have a slice. The jerry builder needed education, so did we all. The builder needs it still, so do we.—Yours,
H. F.



· SOUTH ELEVATION ·

66
SONNING⁹⁹
WESTCLIFF-ON-SEA



· BILL ·

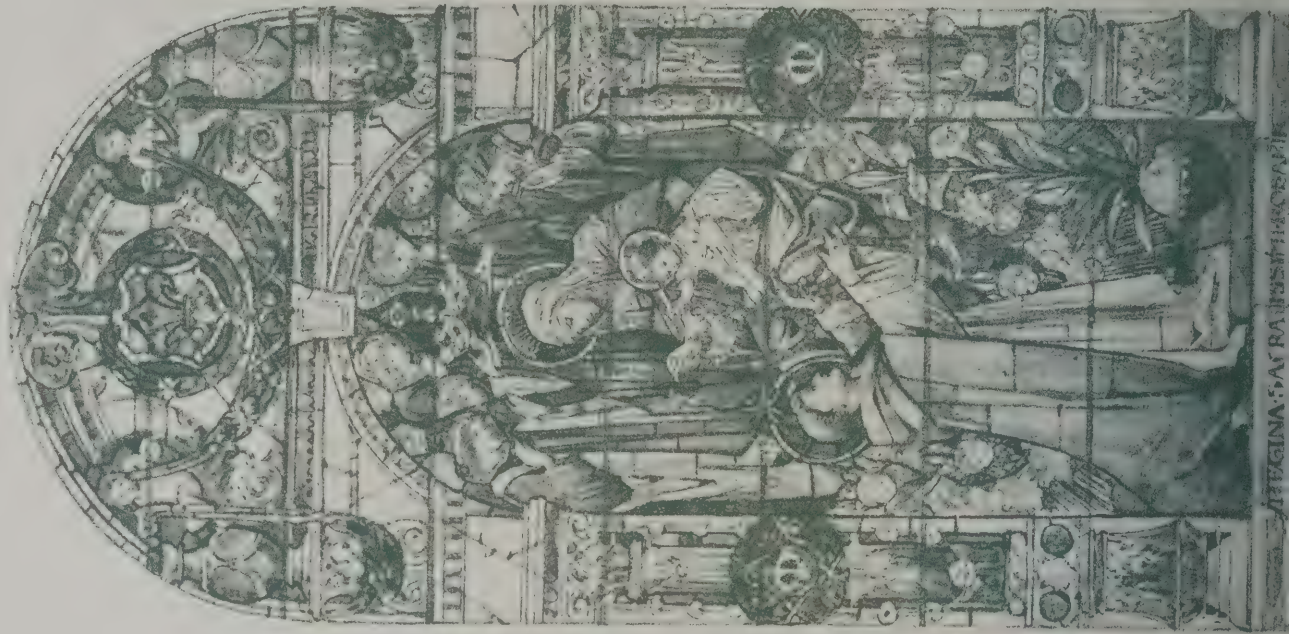


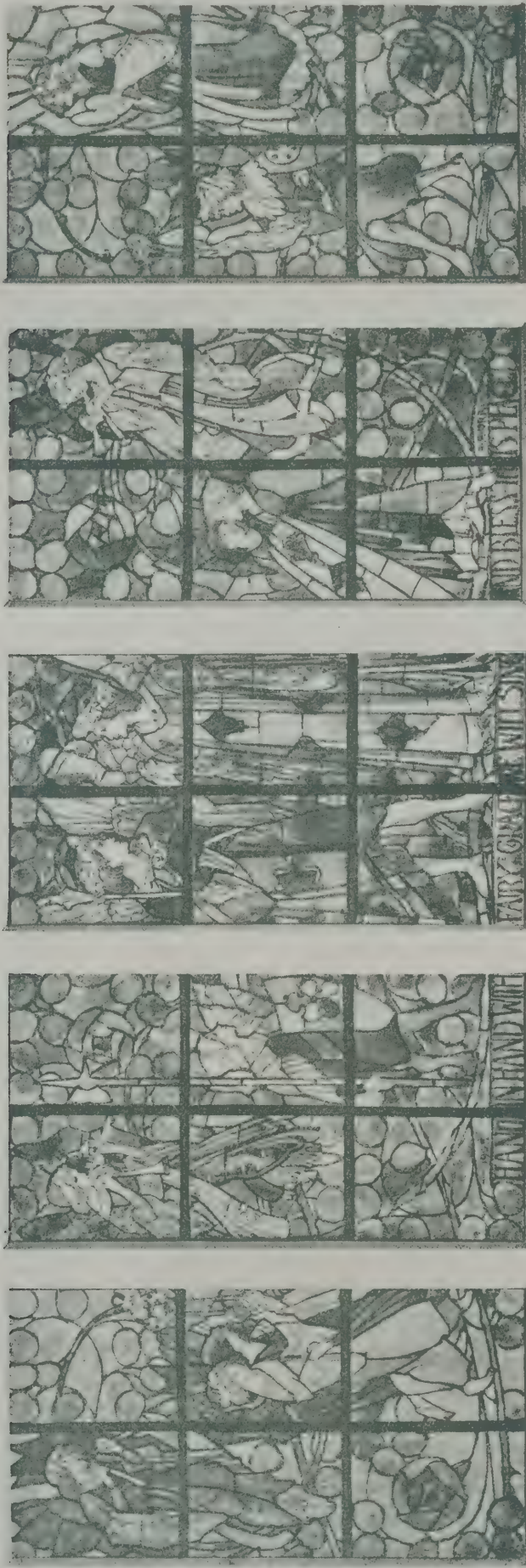
·NORTH ELEVATION·



CABUCHE & HAYWARD, M.M.S.A.
ARCHITECTS.

The Architect, June 23rd 1911.





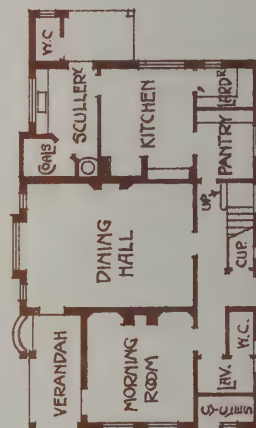
A DOMESTIC WINDOW. BY MR. ARTHUR A. ORR.

DESIGNS FOR STAINED GLASS WINDOWS.

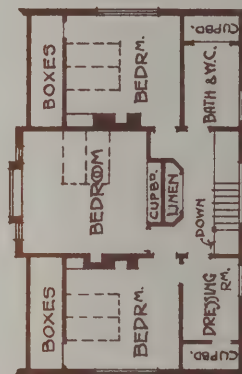


A SUMMER COTTAGE
PLASTERED, BOARDED
& TILED

SCALE OF FEET



THE GROUND FLOOR

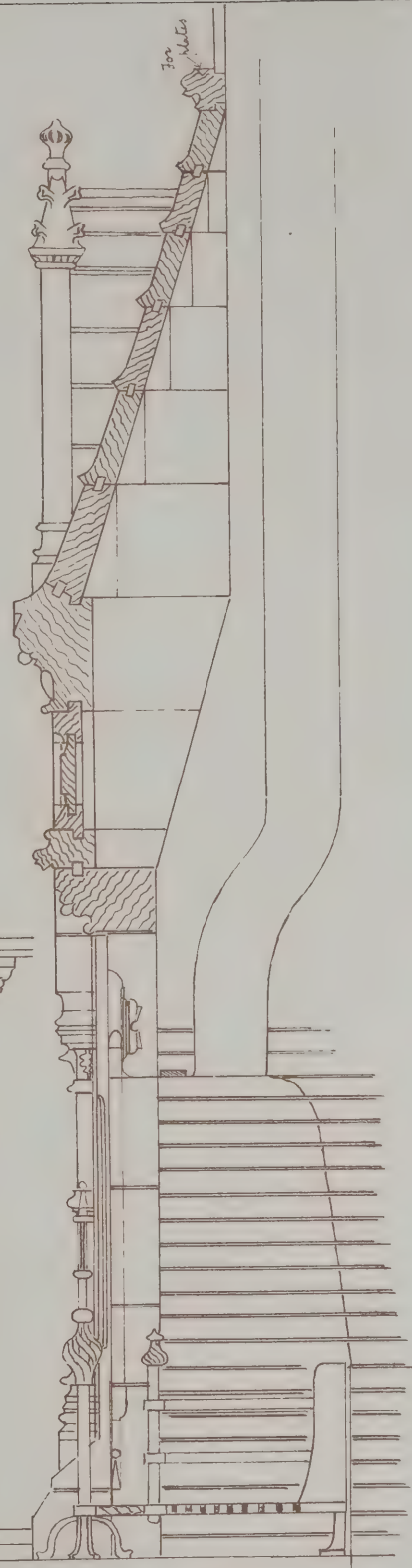


THE FIRST FLOOR

MARSHALL E. WALKER ARCHT.
& ARNOLD HERYWOOD
17 FALL HILL EAST, N.Y.



Front Elevation



Section

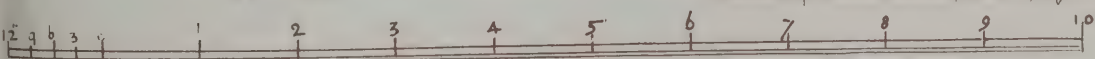
A Coronation Fireplace

E. Swinfen Harris, F.R.I.B.A. inv. et del.
 40, Chancery Lane, London
 & Stony Stratford

June 1911

Plan

Note: The slips to be made of selected Derbyshire fossil, slightly polished, with alternating stones showing shells longwise & crosswise. All exposed bricks to be Stourbridge Fire-brick laid in cement with a wide joint. The Oak to be of well-seasoned Waincoat Oak to full size details. Mottos & flags of fire-days to be gilded, also 3 paterae. Shield of Arms carved, painted, & gilded.



Scale of Feet

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THE

Architect and Contract Reporter.

FRIDAY, JANUARY 6, 1911.

Published weekly, subscription 19s. per annum for Great Britain, and for Colonial and Foreign subscriptions £1 6s. 6d. All business communications to the Managing Director,

P. A. GILBERT WOOD,

Publishing Offices, 6-11 Imperial Buildings, Ludgate Circus, London, England.

Telephone No. 4725 Holborn.

Branch Offices at 43 OLD QUEEN STREET, S.W., Messrs. W. HAY FIELDING & CO. being the representatives for all business purposes.

The Birmingham Offices are at 102 COLMORE ROW.

Entered in the United States of America as second-class matter.

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The International News Co., 5 Bream's Buildings, Chancery Lane, London, England, and New York.

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The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

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. As great disappointment is frequently expressed at the nonappearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

ARGENTINE.—April 20.—A competition of plans for a hospital and school of medicine, to be erected at Rosario in celebration of the Argentine Centenary at a cost of about 149,000*l.* Prizes of 1,050*l.*, 700*l.* and 440*l.* will be awarded. A copy of the conditions, &c., may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, London, E.C., where also a limited number of copies are available for distribution. Plans must be sent to the "Secretaria de la Comisión Pro-Hospital é Instituto de Enseñanza Médica del Centenario, Calle Córdoba 1230," Rosario.

BRADFORD.—The Board of Management of the Bradford Infirmary invite plans with estimates for a new infirmary in Duckworth Lane. Mr. Keith Young, F.R.I.B.A., will act as assessor. Deposit 3*l.* 3*s.*, which will be refunded on receipt of a bona-fide design or if block plan, instructions, &c., are returned within a month after receipt of replies to competitors' questions. The Secretary Superintendent of the Royal Infirmary, Bradford. (For further particulars see advertisement.)

COVENTRY.—April 1.—The Corporation contemplate the erection of municipal offices in the centre of the city, and also possibly a town hall, and accordingly invite competitive designs. Mr. E. Guy Dawber, F.R.I.B.A., will act as assessor. Deposit 2*l.* 2*s.*, which will be refunded on receipt of a bona-fide design or if the particulars are returned within fourteen days of receipt. Mr. Geo. Sutton, town clerk, 10 Hay Lane, Coventry. (For further particulars see advertisement, November 18.)

DEPTFORD.—Jan. 18.—The Deptford Borough Council invite architects practising in the City or County of London who are willing to submit designs for the Deptford Central Library, to send not later than Jan. 18, particulars of similar work carried out by them. Premiums of 50*l.*, 30*l.*, and 20*l.* will be awarded in the subsequent competition among twelve selected architects. Mr. Vivian Orchard, Town Clerk, Town Hall, New Cross Road, S.E. (For further particulars see advertisement, Jan. 6.)

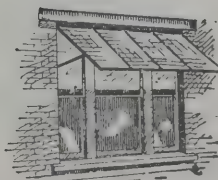
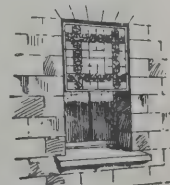
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No Bad Habits.**COAL BILL REDUCED BY HALF.**In maintaining a healthy
Temperature, approximate
Cost of Fuel
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Suitable for Bedrooms, small Offi
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LIVERPOOL - 22 AND 24 SOUTH CASTLE STREET.
GLASGOW - 32 AND 34 BOTHWELL STREET
EDINBURGH - 22 PICARDY PLACE.

Works: FALKIRK.

HABA.—April 15.—An international competition has been held for a Presidential Palace to be erected at Havana at a cost of about 205,000*l*. Premiums of 10,000 pesos and 500 pesos will be awarded. Conditions may be seen at the Legation, 3 Grosvenor Mansions, Victoria Street, or the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

GLASGOW.—Jan. 31.—The Corporation invite plans of a proposed branch library at the corner of Saracen Street and Under Street, Possilpark. Premiums of 50*l*., 30*l*., and 10*l*. will be awarded. A plan of the site and conditions may be obtained free from Mr. A. W. Myles, town clerk, City Chambers, Glasgow.

HULL.—Feb. 1.—The Guardians of Sculcoates Union invite competitive designs for a suite of offices in Margaret Street, Hull. Premiums of 10*l*., 10*s*., 6*l*., 6*s*., and 4*l*., 4*s*. will be awarded. Mr. J. H. Wild, clerk to the Guardians, 12 Key Street, Hull.

LANDRINDOD WELLS.—The Urban District Council invite competitive plans for a pavilion in the recreation ground. First and second premiums will be awarded by an assessor. Mr. D. C. Davies, clerk, Llandrindod Wells.

MANCHESTER.—March 31.—The Corporation invite plans for a Library and Art Gallery upon the Piccadilly in the centre of the city. The Preliminary Competition closes March 31. The authors of ten selected designs will compete in the Final Competition. Mr. Reginald Blomfield, A.R.I.B.A., will act as assessor, in connection with the city architect. Apply for particulars to Mr. Thomas Hudson, Town Clerk, Town Hall, Manchester. (For further particulars see advertisement, January 6.)

ROMFORD.—The Town Planning and Modern House and Garden Exhibition at Gidea Park, Squirrels Heath, in the Romford Garden Suburb, summer 1911. Class IV.—Town Planning of Gidea Park—prizes of 100*l*. and 50*l*. Class VII.—Plans to builders. For excellence of workmanship and construction in the erection of a cottage in Class I. or II.—prize, gold medal and 100*l*.; second prize, 50*l*. Final prizes for designs; Class IV., March 31, 1911. Mr. Michael Ney, A.R.I.B.A., hon secretary, 33 Henrietta Street, London, W.C.

TAUNTON.—Jan. 21.—The education committee invite architects, practising in the Borough of Taunton, to submit competitive designs for a provided school for 440 children. Block plan of site, together with conditions and instructions, may be obtained on application. No premium is offered, but the author of the selected design will have the carrying out of the work at 5*l*. per cent. Mr. George H. Jones, town clerk and clerk to the borough education committee, Municipal Buildings, Taunton.

CONTRACTS OPEN.

BADDILEY.—Jan. 16.—For erection of two single dwelling-houses and one set of farm buildings on the Badbury Estate, near Nantwich, Cheshire. The County Estate Office, 49 Northgate Street, Chester, and at the Estate Office, Bad Lane, Nantwich.

BLACK NOTLEY.—Jan. 16.—For erection of a hospital at Black Notley, Essex, for the Braintree Joint Hospital Board. Mr. E. H. Bright, surveyor, Dodds Hall, Braintree.

BURTON JOYCE.—Jan. 10.—For the extension of the Nottingham engine-house at Burton Joyce Pumping Station, Nottingham. Deposit 1*l*. 1*s*. Mr. F. W. Davies, water engineer, St. Peter's Church Side, Nottingham.

CHARLTON KINGS.—Jan. 28.—For erecting cloakrooms at Charlton Kings Council school. Deposit 2*l*. 2*s*. Mr. R. S. Phillips, architect, Midland Bank Chambers, Gloucester.

CLITHEROE.—Jan. 16.—For erection of a secondary school. Deposit 3*l*. Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

COVENTRY.—Jan. 16.—For joiners' work in chamber, stairs, &c., for extension of acid works at the Foleshill Gas Works, comprising one chamber, 60 feet long by 20 feet wide, 18 feet deep; one Glover tower, 12 feet square, 60 feet high; and two towers, 4 feet 6 inches square, 15 feet high; also ladders and other sundry work. Deposit 1*l*. 1*s*. Mr. Fletcher W. Stevenson, engineer and general manager, Gas Works, Coventry.

CREWE.—For heating, electric lighting, decorating, and furnishing, &c., of the Lyceum Theatre. Send names to Mr. Herbert Winstanley, architect, 49 Deansgate, Manchester.

CUDWORTH.—Jan. 12.—The West Riding Education Committee invite whole or separate tenders for the following works at Cudworth national school, viz.:—Alterations and repairs (builder, joiner, plumber and painter). Deposit 1*l*. The Education Architect, County Hall, Wakefield.

DERBY.—Jan. 19.—For the erection of additional County Offices in St. Mary's Gate. Deposit 3*l*. 3*s*. Mr. Geo. C. Copestick, Lic.R.I.B.A., County Offices, St. Mary's Gate, Derby.

DONCASTER.—Feb. 1.—For the whole of the work in connection with the new institute, for the Trades and Friendly Societies' Institute, Ltd. Send names and 1*l*. 1*s*. deposit to Mr. F. Norman D. Masters, M.A., architect, Bank Chambers, Scot Lane, Doncaster.

DURHAM.—Jan. 17.—The Durham County Council invite tenders for alterations and improvements at Wingate and Chester Moor Council schools. Mr. N. Richley, Shire Hall, Durham.

EASTBOURNE.—Jan. 16.—For erection of additional buildings to the air compressing station at Roselands. Mr. A. Ernest Prescott, borough engineer and surveyor, Town Hall, Eastbourne.

EAST OGWELL.—Jan. 11.—For erection and completion of a farm residence at East Owell, near Newton Abbot. Messrs. Fred. Wm. Vanstone & Sons, architects, surveyors, and civil engineers, Palace Chambers, Paignton.

EDINGLEY.—Jan. 9.—For erection of a parish hall at Edingley, Notts. Messrs. Saunders & Saunders, A.M.I.C.E., A.R.I.B.A., 24 Market Place, Newark.

FOURLANESEND.—Jan. 7.—For erection of a Council school at Fourlanesend, near Millbrook, Cornwall. The District Education Office, Saltash, or Mr. B. C. Andrew, architect to the committee, Biddick's Court, St. Austell.

GRAYS.—Jan. 9.—For structural alterations and the erection of a bath-room at Whitehall, Whitehall Lane, Grays, Essex, for the Guardians of Whitechapel. Mr. Christopher M. Shiner, A.R.I.B.A., The Gate House, Grays, Essex.

HENNOCK.—Jan. 17.—For erection of 60 cottages at Hennock, Devon, for the Teign Valley Granite Co., Ltd. Deposit 3*l*. 3*s*. Messrs. S. W. Houghton & Son, surveyors, 22 Courtenay Street, Plymouth.

HOOLE.—For building new south aisle and vestries to the Church of All Saints, Hoole, Chester. Deposit 1*l*. 1*s*. Messrs. John Douglas & Frank Walley, architects, 6 Abbey Square, Chester.

HULL.—Jan. 11.—For erection of a bowl house, conveniences, &c., at the Pickering Park, and convenience at the Pearson Park. Mr. A. E. White, M.I.C.E., city engineer, Town Hall, Hull.

HUNSLLET.—Jan. 7.—For the erection of moulding shop and reconstruction of roof. Deposit of 10*s*. for each contract, viz. bricklayer, &c., carpenter, slater, plumber, painter and steelwork. Messrs. Myers-Beswick & Partners, engineers, 8 Park Square, Leeds.

IRELAND.—Jan. 11.—For erection of five pairs and three single cottages for labourers, for the Rathdown Rural District Council. Deposit 5*s*. Mr. P. Cuniam, clerk to the Rural District Council.

ISLE OF WIGHT.—Jan. 18.—For the construction of a new high-level landing stage to the Royal Victoria Pier, for the Ventnor Urban District Council. Deposit 2*l*. 2*s*. Mr. H. Hughes Oakes, engineer and surveyor, Town Hall, Ventnor, Isle of Wight.

LONDON.—Jan. 9.—For structural repairs at Nos. 403-9 Mile End Road, E., for the Whitechapel Guardians. The Clerk, 74 Vallance Road, Whitechapel, E.

LONDON.—Jan. 9.—For the renewal of the zinc roof on a portion of the Vallance Road Infirmary, for the Guardians of Whitechapel Union. The Steward of the Infirmary, 74 Vallance Road, N.E.

LONDON.—Jan. 18.—The Metropolitan Asylums Board invite separate tenders for the following work:—(1) Mess-room for charge nurses at the North-Western Fever Hospital, Lawn Road, Hampstead, N.W. (2) Erection of verandahs at the Children's Infirmary, Carshalton, Surrey. (3) Erection of greenhouse and potting-shed at the Children's Infirmary, Carshalton, Surrey. Deposit 1*l*. 1*s*. each contract. Mr. W. T. Hatch, M.Inst.C.E., M.I.Mech.E., engineer-in-chief, the Office of the Board, Embankment, E.C.

LONDON.—Jan. 24.—For the supply and erection of two external iron fire escape staircases and the formation of new exit doors at the Children's Infirmary, Crown Hill, Upper Norwood, S.E., for the Lambeth Board of Guardians. Deposit 2*l*. Mr. James L. Goldspink, Guardians' Board Room and Offices, Brook Street, Kennington Road, S.E.

LYDBROOK.—Jan. 28.—For the carrying out of alterations and additions to Joys Green Council school, near Lydbrook. Deposit 2*l*. 2*s*. Mr. R. S. Phillips, architect, Midland Bank Chambers, Gloucester.

MOULSFORD (Berks.).—Jan. 18.—For the erection of a terrace of six cottages at Moulsoford, for the Committee of

the Berkshire Lunatic Asylum. Deposit 1*l*. Mr. W. R. Howell, F.R.I.B.A., 17 Blagrove Street, Reading.

NANTWICH.—Jan. 16.—For the supply of materials and for daywork labour required in the carrying out of certain works, being alterations and additions to the dwelling-houses and farm buildings known as Batherton Dairy House and Batherton Hall, near Nantwich, Cheshire. The County Estate Office, 49 Northgate Street, Chester, and at the Estate Office, Broad Lane, Nantwich.

OLDHAM.—Jan. 10.—For the various works required in the construction of a pumping station, comprising engine-house, workshop, store-room, &c., together with boundary wall and other works in connection therewith, to be erected at Butterworth Hall, Milnrow, for the Oldham Waterworks Committee. Deposit 2*l*. Mr. Charles J. Batley, M.I.C.E., Piethorn, Newhey.

POSTBRIDGE.—Jan. 16.—For erection of a bungalow at Postbridge, Devon. Deposit 1*l*. 1*s*. Mr. Josias C. Beare, A.R.I.B.A., architect, 42 Devon Square, Newton Abbot.

PUDSEY.—Jan. 7.—For erection of United Methodist Sunday school and institute. Deposit 10*s*. Mr. W. Hugill Dinsley, architect, Chorley, Lancs.

SCOTLAND.—Jan. 7.—For mason, joiner, plumber, slater, plaster, and painter works, in connection with the Maddiston school extension, for the Muiravonside Parish School Board, Stirlingshire. Send names and 10*s*. 6*d*. deposit to Messrs. Malcolm & Robertson, architects, Charing Cross, Grangemouth.

SCOTLAND.—Jan. 14.—For erection of three boat slips at (1) Port an Uidh, (2) Caolis, and (3) Vatersay Bay, in the island of Vatersay, Barra, and in Saltavig Bay, near Lochboisdale, South Uist. Mr. Walter G. Coles, F.S.I., engineer, Scottish Office Engineering Department, 122 George Street, Edinburgh; or of Supervisor Monk, Castlebay, Barra, and Supervisor Coull, Lochboisdale.

SCOTLAND.—Feb. 1.—The Royal National Lifeboat Institution invite tenders for the construction of a corrugated steel and timber lifeboat house and solid concrete and reinforced concrete (Considere system) slipway near the entrance to the South Harbour, Peterhead. Deposit 1*l*. Mr. Robert Gray, local hon. secretary, Peterhead, Aberdeenshire, or Mr. W. T. Douglass, M.Inst.C.E., 15 Victoria Street, Westminster, S.W.

SMETHWICK.—Jan. 16.—For the erection of new mission church of St. Dunstan, Bearwood, Smethwick. Deposit 1*l*. 1*s*. Mr. S. N. Cooke, architect, 33 Newhall Street, Birmingham.

SOUTHAMPTON.—Jan. 13.—For alterations to "F" warehouse, Town Quay (a small general building job). Deposit 1*l*. Mr. E. Cooper Poole, A.M.I.C.E., engineer to the Board, Town Quay, Southampton.

SOUTH FERRIBY (HULL).—For proposed Sunday schools. Send names as soon as possible to Mr. J. Dawson, South Ferriby, Hull.

STAINES.—Jan. 13.—For supplying about 1,600 yards of unclimbable wrought-iron railing and gates, together with a short length of ornamental wrought-iron fencing with entrance gates, and erecting the same upon ground to be laid out as a cemetery. Mr. E. J. Barrett, A.M.I.C.E., surveyor, Town Hall, Staines.

STIBBARD (NORFOLK).—Jan. 14.—For erection of proposed Wesleyan Church at Stibbard, Norfolk. Messrs. A. F. Scott & Son, architects, 24 Castle Meadow, Norwich.

TARVIN.—Jan. 18.—For alterations and additions to the County Police Station, Tarvin, Cheshire. Deposit 1*l*. Mr. H. Beswick, F.R.I.B.A., county architect, Newgate Street, Chester.

THRYBERGH.—Jan. 12.—The West Riding Education Committee invite whole or separate tenders for the following works at Thrybergh Council school, viz.:—Erection of caretaker's house (builder, joiner, tiler, plumber, plasterer and painter). The Education Architect, County Hall, Wakefield. Send 1*l*. deposit to the West Riding Treasurer, County Hall, Wakefield.

TIPTON.—Jan. 9.—For the erection of shedding and stores on and adjoining the Gas Works. Mr. Wm. H. Jukes, M.E., engineer and surveyor, Public Offices, Owen Street, Tipton, Staffs.

WALES.—For erection of a block of office buildings in James Street, Bute Docks, Cardiff. Send names and 2*l*. 2*s*. deposit to Mr. Henry Budgen, F.R.I.B.A., 95 St. Mary Street, Cardiff.

WALES.—For the erection of a church at Gorseinon. Send names to Mr. W. D. Jenkins, F.S.I., A.R.I.B.A., Llandilo.

WALES.—Jan. 9.—For erection of twenty or more dwelling-houses at Carnetown, Abercynon, for the Salisbury

Building Club. Mr. Treharne Jones, architect and veyor, Nelson, via Cardiff.

WALES.—Jan. 10.—For the supplying and erecting plete of about 1,150 yards of unclimbable wrought-iron fence and five wrought-iron gates at their sewage disposal works for the Maesteg Urban District Council. Mr. Samuel Harpur, engineer and surveyor, Town Hall, Maesteg, Morgans.

WALES.—Jan. 11.—For the following works, for Glamorgan County Council, viz.:—(1) New girls' intermediate school at Treforest, near Pontypridd; (2) new intermediate department of the Council school at Crynant, near Neath; (3) new boys' school at Gorseinon; (4) new infants' school at Nanthir, Blaengarw; (5) new offices at Bridgend Council school. The Glamorgan County Council Office, Westgate Street, Cardiff.

WALES.—Jan. 13.—For erection of a fire station at Fale, Glamorgan, for the Rhondda Urban District Council. Deposit 1*l*. 1*s*. The Council Offices, Pentre, Rhondda.

WALES.—Jan. 21.—For building a dwelling-house at Blaenporth. Mr. David Kane, 35 Fern Street, Morriston, Porth, Glam.

WALES.—Jan. 23.—For erection of a residence at Tylorstown. Deposit 1*l*. 1*s*. Messrs. A. O. Evans, Williams & Evans, architects, Pontypridd.

WALES.—Feb. 1.—The Royal National Lifeboat Institution invite tenders for the construction of a corrugated steel and timber lifeboat house, reinforced concrete (Henric system) slipway and reinforced concrete and steel approach gangway at Fryar's Weir, near Beaumaris, in the County of Anglesey. Deposit 1*l*. Mr. James Hartley Panton, local hon. secretary, Fryars, Beaumaris, or Mr. W. Douglass, M.Inst.C.E., 15 Victoria Street, Westminster, S.W.

WALTHAMSTOW.—Jan. 17.—For carrying out the following works, for the Walthamstow Education Committee:—(a) Girls' School, Higham Hill, the erection of a new building of out-offices, removal of existing offices, new iron fencing, sundry other works; (b) Longfield Avenue site, the provision and erection of about 1,250 feet run of wrought iron unclimbable fencing, with dwarf wall to frontage portico gates, pillars, and sundry works. Mr. H. Prosser, M.S.A., architect, Education Committee Offices, High Street, Walthamstow.

TENDERS.

ASHFORD.

For fitting-up chemical and physical laboratories, &c., at Ashford County school, for the Middlesex County Council. Mr. H. G. CROTHALL, architect to the Education Committee.

Bennett Furnishing Co.	£448 0
Wake & Dean	385 12
Fairhead & Son	375 0
Hammer & Co.	367 15
Baird & Tatlock (recommended)	343 0

BARNSTON.

For the erection of a detached villa called Wychwood Barnston, for Mr. W. H. Blake. Mr. J. H. McGovern, architect, 26 North John Street, Liverpool. BESZANT (accepted) £595 9

BOWES PARK.

For alterations to the Bowes Road Council school, for the Middlesex County Council. Mr. H. G. CROTHALL, architect to the Education Committee.

L. & W. H. Patman	£240 0
Monk	197 0
Fitch & Cox	179 0
Wilton	172 10
Mattock Bros. (recommended)	157 0

BRENTFORD.

For extension of playground of the Brentford Rothschild school, for the Middlesex County Council. Mr. H. CROTHALL, architect to the Education Committee.

Heath	£375 0
Larchet & Bowen	364 15
Dorey & Co.	348 0
Lacey	342 0
Morgan	313 8
Jamieson	304 10
Hidden (recommended)	285 0

DUNSTABLE.

constructing tanks, percolating filters, and alterations to main outfall sewer, for the Corporation. Messrs. DIGGLE & SONS, civil engineers, Westminster, S.W.			
Pedrette	£5,929	3	3
Turner	5,625	0	0
Powdrill	5,086	14	2
Edward & Co.	4,862	14	8
Bell & Sons	4,824	0	0
Jewell	4,737	19	6
Thompson & Co.	4,701	19	0
Southern & Co.	4,679	15	5
Barry	4,673	16	0
Annakin & Son	4,609	14	0
Higgs	4,503	18	8
Junliffe & Sons	4,464	8	0
Yorkshire Hennebique Contracting Co.	4,360	13	8
WILSON & Co., Wendling (accepted)	3,998	12	0

EAST PECKHAM.

the erection of villa at Snoll Hatch. Mr. C. H. SOUTER, surveyor.			
Burd	£603	7	5
Davison	576	0	0
Warren	562	10	0
Benfield	552	0	0
MIDDLETON (accepted)	498	0	0

FELTHAM.

extension of the Feltham Council school, for the Middlesex County Council. Mr. H. G. CROTHALL, architect to the Education Committee.			
Lodge	£1,779	0	0
Fairhead & Son	1,749	0	0
Jordan	1,718	0	0
Renshaw	1,647	0	0
Lacey (recommended)	1,549	0	0

HAMPTON WICK.

alterations to the Hampton Wick Council school, for the Middlesex County Council. Mr. H. G. CROTHALL, architect to the Education Committee.			
Heath	£1,205	0	0
Lacey	1,195	0	0
Collinson & Co.	1,122	0	0
Jordan	1,096	0	0
Rice & Son	1,040	0	0
Dickens	1,020	0	0
Thomas	963	0	0
Casse (recommended)	947	0	0

HANWORTH.

extension of playground of the Hanworth Council school, for the Middlesex County Council. Mr. H. G. CROTHALL, architect to the Education Committee.			
Lodge	£218	0	0
Taylor	218	0	0
Watson	195	10	0
Jordan	195	0	0
Wilkes	186	3	7
Evans (recommended)	183	10	0

HARROW.

new elementary school and cookery and manual training centre at Welldon Park, Harrow, for the Middlesex County Council. Mr. H. G. CROTHALL, architect to the Education Committee.			
Renshaw	£6,389	0	0
Rice & Son	6,332	0	0
Dickens	6,250	0	0
Neal	6,188	0	0
Treasure & Son	6,102	0	0
Fairhead & Son	6,095	0	0
Lawrence & Son	6,092	0	0
Monk	6,070	0	0
Knight & Son	5,973	0	0
Brand, Pettitt & Co.	5,950	0	0
Lacey	5,936	0	0
Stewart	5,820	0	0
Mattock Bros. (recommended)	5,757	0	0
fitting-up chemical and physical laboratories, &c., at the Harrow County school, for the Middlesex County Council. Mr. H. G. CROTHALL, architect to the Education Committee.			
Bennett Furnishing Co.	£470	0	0
Knight & Son	420	0	0
Wake & Dean	419	0	0
Hammer & Co.	365	15	0
Baird & Tatlock (recommended)	355	0	0

LIVERPOOL.

For alterations and conversion of dwelling houses into shops, Nos. 263 to 271 Great Homer Street, Liverpool, for Mr. J. H. Foster (Queen & Foster). Mr. J. H. McGOVERN, architect.			
BESZANT (accepted)	£663	11	2
For alterations and conversion of Adelphi Theatre into arena hall, Christian Street, Liverpool, for Messrs. Harmood Banner & Sons. Mr. J. H. McGOVERN, architect.			
DESOER (accepted)	£488	14	5

LONDON.

For the provision of an additional locomotive crane on the pier at the Crossness outfall works.			
Coles	£501	0	0
Grafton & Co.	492	0	0
T. Smith & Son, Rodley (recommended)	449	0	0
Isles, Ltd.	438	0	0
For the provision and erection of unclimbable iron fencing adjoining the sewer aqueduct at Wandsworth, for the L.C.C.			
Rayboulds, Ltd.	£301	19	6
Hill & Smith	256	5	9
Palmer & Co.	245	13	7
Bain & Co.	232	11	6
Bayliss, Jones & Bayliss	232	1	6
Miller & Sons	215	0	11
John Elwell, Ltd., Birmingham (recommended)	196	15	6
For the erection of a tramway weather shelter at the junction of Queen's Road and New Cross Road, Deptford.			
Pontifex & Co.	£279	10	0
Charles Wall, Ltd.	215	0	0
The St. Pancras Iron Work Co., King's Cross, N.W. (recommended)	210	0	0
Architect's estimate	240	0	0
For alterations and additions to Burney House, Greenwich, S.E. Mr. A. RUSSELL, architect, 13 Basinghall Street, E.C.			
Shorter & Co.	£700	0	0
Western	670	0	0
Groves	669	0	0
SMITH, Greenwich (recommended)	617	0	0

NEW BRIGHTON.

For the erection of a pair of semi-detached villas, 35-37 Sandymount Drive, New Brighton, for Messrs. W. Holdsworth & J. F. Taylor. Mr. J. H. McGOVERN, architect.			
BESZANT (accepted)	£1,164	18	11

WALES.

For erection of a public convenience in Llandaff Fields, for the Cardiff Corporation. Mr. W. HARPUR, city engineer.			
Maggs & Co.	£454	15	4
Davies	452	8	4
Gough Bros.	439	0	0
Bryan	423	16	10
Griffiths & Son	399	19	11
Hatherley & Co.	391	7	10
Symonds & Sons	391	2	9
E. D. W. Evans	371	5	0
W. H. Evans	361	3	9
Tucker Bros.	335	18	1
Cox, Llandaff (accepted)	311	17	4
For the erection of a boys' and girls' school at Thomastown Park, Merthyr. Mr. THACKERAY, deputy borough engineer, Merthyr.			
Spencer, Santo & Co.	£11,389	0	0
Davis & Sons	10,606	0	0
Jones Bros.	9,830	0	0
Williams & Sons	9,802	0	0
COLBORNE, Swindon (accepted)	9,498	0	0
For erecting new infants' school at Dannen View, Merthyr. Mr. THACKERAY, deputy borough engineer, Merthyr.			
Jenkins Bros.	£4,784	0	0
Jones	4,549	0	0
Spencer, Santo & Co.	4,530	0	0
Davis	4,460	0	0
Davis & Sons	4,360	0	0
Jones Bros.	4,060	0	0
Williams & Sons	3,946	0	0
COLBORNE, Swindon (accepted)	3,769	0	0

THE LATE JOHN HOWARD COLLS.

THE news of the death of Mr. Howard Colls, on the 29th ult., at Buenos Aires, will be received with deep regret by a very large number of our readers. His prominent activity, not only as one of the foremost and best respected contractors of the City of London, but in charitable work, in the political circles and social life of architecture and building, made him well known not only to his friendly rivals in the building trade, but to a large number of architects and surveyors. He was a beneficent friend of all the charitable societies connected with the building trade as well as of others outside that sphere, and his connection with these societies took the form not only of patronage but of hard personal work and organisation. Hence everybody knew Howard Colls, and had for him the sincerest good feeling and affection.

Mr. Colls conferred a great benefit on architecture and building by the decision on the law of ancient lights that he obtained in the House of Lords, after a protracted and expensive series of law suits, in the case of *The Home and Colonial Stores v. Colls*, a decision that has rendered this the leading case on the subject. The benefit thus conferred was recognised by the presentation to Mr. Colls of his portrait, painted by Sir W. Q. Orchardson, R.A., which is now exhibited in the winter exhibition of the Royal Academy.

The following is a list of the various institutions with which the late Mr. Howard Colls was connected:—Joint chairman of the firm of George Trollope & Sons and Colls & Sons, Ltd., director of the Builders' Accident Insurance Company, director of Hobbs, Hart & Co., Ltd., Associated Member of the Institute of Civil Engineers, member of the Tariff Commission since its inception, member of the following City Companies: Carpenters' Company, Fishmongers' Company, Gold and Silver Wyre Drawers' Company.

President of the Institute of Builders 1887 and 1888, president of the London Master Builders' Association 1890 and 1891, trustee of the London Master Builders' Association Reserve Fund since 1902, president of the Builders' Benevolent Institution 1888, treasurer of the Builders' Benevolent Institution since 1899, trustee of the Builders' Benevolent Institution since 1899, president of the National Federation of Building Trades Employers of Great Britain and Ireland 1889 and 1890, president of the Builders' Clerks' Benevolent Institution 1883, member of the Coleman Street Ward Club since 1877 (hon. secretary for over 30 years and treasurer since 1904), on the committee of the Evelina Hospital, president of the Camberwell and Dulwich Pension Society, and president of the North Camberwell Conservative Association.

THE REGISTRATION OF PLUMBERS.

THE Board of Trade, under the powers enabling the Board to allow the registration of special trade marks where the Board deem it to be to the public advantage, have granted to the Worshipful Company of Plumbers the registration of a *standardisation* trade mark to be used in connection with the work of registered plumbers.

The regulations prescribed by the Board for the use of the mark provide that it shall be used as far as admissible in connection with water pipes and fittings complying with the standard specifications of the Incorporated Joint Committee on Water Regulations.

Certificates issued by the Company to plumbers desiring to execute orders for marked work contain the following chief conditions:—

(1) The plumbers authorised to mark the work in manner prescribed by the Company shall be registered under the provisions in force for the national registration of plumbers.

(2) The certificates shall be renewable annually and shall not be assignable.

(3) The holder of the certificate, or, if he be an employer, his authorised employé, shall be responsible for the soundness and efficiency of the work executed.

(4) The certificate is liable to cancellation in default of the holder's compliance with the conditions.

The names and addresses of registered plumbers holding certificates for the current year are required to be notified to the Board of Trade.

The Worshipful Company of Plumbers have issued the following notice as to employment of registered plumbers:—

The health and water authorities and the architectural and medical professions of the United Kingdom have approved and aided in establishing the national registration of plumbers in the interests of the public health and welfare.

The registration is carried out by the Worshipful Company of Plumbers, acting through London and Provincial Councils composed of the representatives of the master and operative plumbers and the architects, engineers, and other officially and professionally concerned in the specification and regulation of plumbers' work.

Every registered plumber is required to produce, when desired, a certificate of his registration, bearing the number thereof and the date of the current year, if produced *after* March, or the date of the previous year if produced *before* March in any year.

Every registered plumber is liable to the cancellation or suspension of the certificate entitling him to describe himself, or to work, as a "registered plumber" in the event of his doing any act which is found upon inquiry to be contrary to the integrity of the trade or injurious to the public.

Any person employing a registered plumber, or having work carried out for him by a registered plumber, who has cause to complain of the work executed by such plumber, is entitled to require such complaint to be investigated by the Company, and the result of the investigation to be reported to him, provided the complaint be made in writing and includes the following preliminary particulars:—

(1) The nature of the contract, agreement, or arrangement under which the registered plumber was employed.

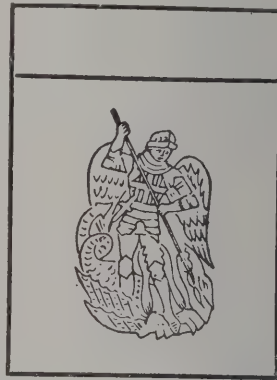
(2) The name and address or registered number of the plumber.

(3) The nature of the work he was employed to carry out—*i.e.* whether connected with hot or cold water service, bath, lavatory, or other appliance, and whether new or repairing work.

(4) The nature of the defects found in the work complained of—*i.e.* whether in respect of sanitary efficiency, soundness, suitability, or otherwise.

(5) It should be further stated whether the complainant would be prepared to pay such expenses as might be arranged for making an examination of the work in the event of the Company considering these preliminary particulars rendered such examination or further inquiry necessary or desirable, it being understood that in the event of the Company finding the complaints to be justified any expenses incurred in examining the work would be borne by the Company or recouped to the complainant by the Company.

Description of the Mark.—The figure of St. Michael the Archangel, which forms the crest of the Plumbers' Company, typifies the Destroyer of Evil, to represent the work and aims of the Company.



Note.—The space above the figure is provided to receive the number of the registered plumber who executes the work which is intended to be marked with the Company's standardisation mark, and also the letters R.P. (signifying "Registered Plumber") and an alphabetical letter signifying entry in the register kept by the Company under regulations prescribed by the Board of Trade.

MESSRS. F. BOREHAM & SON, architects, of 73 and 75 Finsbury Pavement, have taken into partnership Mr. Alfred Gladding, A.R.I.B.A., of Birmingham, and the firm will in future practise at the same address under the title of F. Boreham, Son & Gladding.

In the concluding article on "Petrol Air-Gas" by Professor C. A. M. Smith, which appeared in our issue of December 30, a printer's error occurred in the paragraph on page 426 dealing with the author's opinions as to the best systems. The sentence in question should read:—"While not in any way disparaging as bad many other systems, we should give preference to either a plant made by the Safety Light Company, the National Air-Gas Company, or the 'Solux' plant made in Edinburgh."

RUISLIP MANOR TOWN PLANNING COMPETITION.

Précis of Report accompanying Second Premiated Design by
Mr. GEORGE HORNBLOWER, F.R.I.B.A.

OPEN spaces are provided for both use and effect, whilst large playing-fields suitable for cricket, football, &c., are in proximity to the smaller houses, and open playgrounds where children will be within view of the houses. Adequate grounds are shown for croquet, tennis, bowls, &c., adjoining the sites for large houses.

It is felt that the retention of large, unpoliced areas of woodland is undesirable, and likely to be a nuisance at holiday times. The alternative was consequently adopted of devoting the woodland areas to larger houses on larger plots, where the bulk of the trees might be saved to preserve the character. Where land can be had on terms so favourable, plots 150 feet in depth can be afforded even to smaller houses, and none are shown less in depth.

Comparatively little planting would be necessary along the roads; large plots of the site have well-grown timber which would be preserved.

Part of the Copse Wood area, owing to the small stream which traverses it and becomes swollen in winter, is unfit to build upon. A small park or ornamental garden is provided here. Considerable areas on either side of the River Pinn, and also on either side of the smaller stream near Northolt Junction are liable to be flooded. These areas, with other land adjoining, are set apart as open spaces. The River Pinn is a considerable stream with the banks in parts prettily wooded, and would form an attractive feature in the park where, by an enlargement, a lake could be formed as suggested.

The character of the higher ground, owing to undulations and beautiful timbering, should render it very attractive to people of means, and a strong effort should be made to keep the building plots large. Obviously more plots than shown could be arranged without altering the scheme.

The factories and workshops are placed at the lower end of the site. The design of such buildings is being more and more studied, and it is felt they need not be inartistic. Instances could readily be cited of both old as well as new which are suitable additions to the appearance of a town. Generally, however, they would especially need to be controlled as to design and treatment.

Economy in road formation has been a principal consideration, as the following table shows:—

	Acres.
Area devoted to building plots	994
Area devoted to open spaces	137*
Area devoted to roads	145
Approximate total area	1,276

The roads are planned as far as possible to run north and south, the departure where a diagonal treatment gives direct access to Ruislip making the laying-out interesting as well as useful. Convenience of access to all parts of the estate has been well considered, and, as a means of transit, electric tramways are suggested along the main roads.

The sites for places of worship are provided where due quiet should be secured. Shopping and business centres are arranged in central positions, including a desirable one for the Copse Wood area. Motor garages are needed in three or four places, and suitable positions are indicated. Sites for public buildings, clubs, &c., are shown for convenience of access near the main avenue and suggested tramways, and the suggested positions for schools have been carefully considered.

Though it is quite possible to develop the estate without having recourse to a scheme under the Housing and Town Planning Act, a scheme under the Act is recommended.

MESSRS. SPRAGUE & CO., LTD., the lithographers, have issued the forty-second annual edition of their neat pocket diary. The new matter includes a list of the officers and fixtures of the Royal Institute, and of other societies connected with the architectural profession. This diary has long been favourably known for its usefulness.

MR. HOWARD CHATFIELD CLARKE asks us to note that through the action of the authorities in amalgamating Bishopsgate Street Within with Bishopsgate Street Without (to be known as Bishopsgate) his address has now been altered to No. 102 Bishopsgate, E.C.

* As already explained in regard to open spaces, where trees occur large plots are allotted to superior houses.

DIARIES, REFERENCE BOOKS AND YEAR BOOKS.

MESSRS. HUDSON & KEARNS, LTD., have sent us four of their general and professional diaries, viz.:—No. 9, which is for universal use, and gives two days to each page; No. 11, *The Builder's Diary*, which incorporates No. 9 with several extra sections and a considerable amount of trade information and tables; No. 12, *The Architect's Diary*, has a whole page to each day, but the size is not increased, as the tables, &c., are omitted from the end, though the opening 205 pages are intact; No. 13, *The Architect's Diary*, is the bulkiest, because two pages are devoted to each day's diary of appointments, details of business transacted, and cash columns. The diaries of Messrs. Hudson & Kearns have become by now as indispensable in many offices as their blotting pads, and their non-appearance at the opening of a new year would produce dismay.

Who's Who (A. & C. Black) grows year by year in size and in importance. The terse introductory note does not indicate how many fascinating thumb-nail biographies are included, but we should venture to estimate the number at twenty thousand. If the best study of mankind is man, *Who's Who* should prove an invaluable text-book; for the skeleton outline given of many eminent careers is ample food for thought. The architectural profession appears to be fairly well represented, though some few names are omitted which would be of great interest. Perhaps these gentlemen's modesty prevented their inclusion. The book is too well known to need further comment. From the same publishers come *The Englishwoman's Year-book and Directory* and *The Writers' and Artists' Year-book*. The former is a mine of information and instruction concerning the careers open to women, and the multitudinous interests which affect them. The latter is a guiding hand to aspiring writers.

Whitaker's Almanack has seen many rivals appear during the forty-three years of its existence, but it has not yet been ousted out of its front-rank position, nor is it likely to be. From cover to cover it runs to practically a thousand pages, and of the 850 odd devoted to editorial matter it may be said that not an inch is wasted. The type is necessarily small to allow of the requisite amount of material, and the letter-press is succinct for the same reason. But both are clear and eminently readable. Regarded as value for half a crown, it is nothing short of wonderful. As a complement to the *Almanack* we can equally praise *Whitaker's Peerage*, which has reached its fifteenth annual issue.

COMPETITION NEWS.

BERNE.—The Secretary of the Royal Institute of British Architects has received the following letter from the Postmaster-General:—"I am directed by the Postmaster-General to inform you that no suitable design having been submitted in connection with the recent competition for the erection of a monument at Berne to celebrate the foundation of the International Telegraph Union, it has been decided to hold a further competition, for which designs must be sent to Berne by August 15 next. I am to enclose three copies of the programme for your information. From the Report upon the recent competition made by the International Jury who considered the designs it appears that out of the ninety-two designs submitted no less than seventy were either clearly inadequate or had no relevance to the idea which they were intended to represent. The Jury wish to emphasise the importance of fully realising the idea which the monument is to commemorate, and of submitting only such designs as could be carried out under the conditions set forth in the programme, and it is considered desirable that the attention of intending competitors should be specially called to these requirements." The three copies of the programme alluded to above are now in the Library of the Royal Institute.

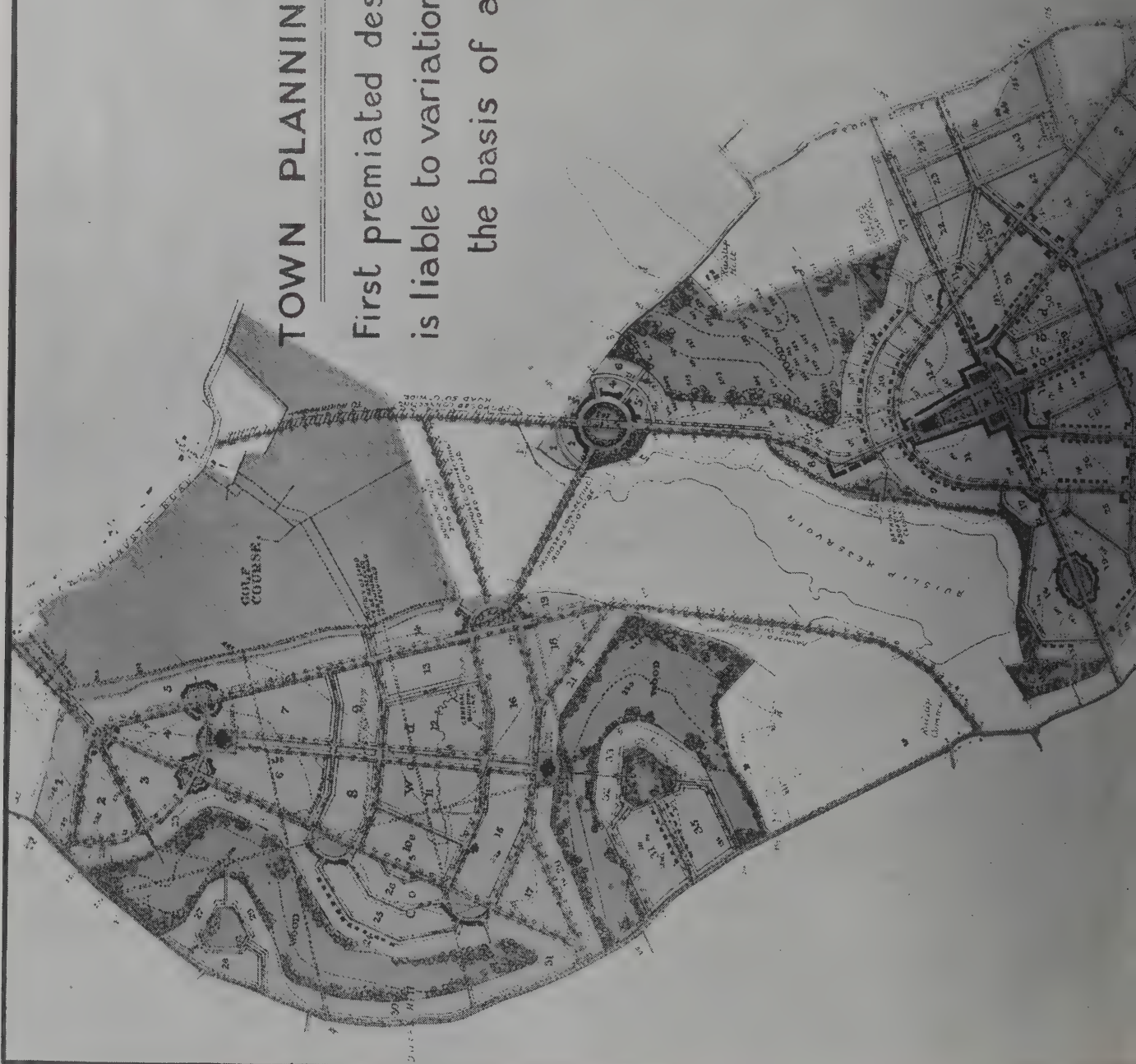
LLANDUDNO.—Mr. R. T. Beckett, architect, Chester, has been placed first in the competition for designs for a church at West Llandudno. The second premium of 10l. has been awarded to Mr. H. L. North, architect, Llanfairfechan. Mr. W. D. Caroe acted as assessor.

SOUTHAMPTON.—The Council of Hartley University College have adopted a recommendation that an open competition should be held for designs for new college buildings. The entire scheme is for a building for 400 students, to be erected at a probable cost of 100,000l. Towards this amount the Council have in hand not more than 13,000l. It is proposed to begin with the Arts block. On the recommendation of Mr. Leonard Stokes, F.R.I.B.A., the Governors have engaged Mr. H. T. Hare to act as assessor.

RUISLIP MANOR COMPETITION.

TOWN PLANNING COMPETITION

First premiated design which, if adopted, is liable to variation and is not to form the basis of any contract.



Selected Design by Messrs. A. & J. Soutar.



THE LAYING OUT AND DEVELOPMENT OF BUILDING ESTATES.

At the Law Society, on Tuesday, Mr. E. J. Naldrett gave the first of a series of four lectures on Local Government Law, in which the powers, &c., of local authorities and the rights, &c., of owners in connection with the laying-out and development of building estates will be considered.

Sir HOMEWOOD CRAWFORD, Solicitor to the City of London Corporation, who was in the chair, said that the law relating to local government was a speciality in itself, and one which is of extreme importance at the present day having regard to the very rapid growth of local government, especially in connection with the extended powers which are so readily given by Parliament to municipalities. Therefore it behoved all of them, and particularly those connected with the legal profession, to make themselves absolutely up to date with the various changes which were taking place so rapidly. The course of lectures which Mr. Naldrett had so kindly arranged covered a very large area. The first would deal with the laying-out of building estates and with the law applying to that, both inside and outside the Metropolis. Then it was proposed to have a lecture on the 5th inst., another on the 10th, and the final one on the 12th. He hoped that in the third lecture the lecturer would be able to solve the knotty problem as to what is really a drain as distinguished from a sewer, and *vice versa*. The final lecture would deal with the Town Planning Act of 1909, which was a very important matter. At this present moment there was a proposal to lay out about 5,000 acres in the immediate neighbourhood of the Metropolis, taking advantage of the provisions of this new statute.

Mr. E. J. NALDRETT said that in delivering these four lectures on behalf of the Society it was proposed to deal in a more or less practical way with some of the legal considerations which arise in the laying out of a building estate and its subsequent development—i.e., the questions which arise between the owner on the one hand and the local authority on the other. Before doing so, however, he referred in brief outline to our present system of local government, mentioning all the important statutes from the Highways Act of 1835 to the Housing and Town Planning Act of 1909, and pointing out more particularly the functions of borough councils, urban district councils and rural district councils in the provinces, and the relationship between the London County Council and the borough councils in London.

The necessity for contracts entered into by municipalities to be under seal was referred to. In the case of urban district councils it was laid down by statute that all contracts exceeding 50*l.*, and in the case of London borough councils contracts exceeding 10*l.*, should be under seal. In the case of *Lawford v. Billericay R.D.C.* (1903), 1 K.B. 772, it was held that the absence of a contract under seal was no answer to an action brought in respect of work done or for goods supplied.

For some reason the Metropolis had been furnished with a separate and distinct code of local government law, as compared with the provinces, and although in some respects the two codes contained similar provisions they were derived from different statutory sources. The most important exception was the recent Housing and Town Planning Act, to which he would refer in a later lecture. Outside the Metropolis, the Act to which attention should be specially directed is the Public Health Act of 1875, with the subsequent amending, qualifying, and extending statutes, which dealt with many matters concerned with sewerage, drainage, streets, buildings, &c., of great importance in the development of building estates. There were also the adoptive Acts, which enabled local authorities to obtain certain additional powers without being obliged to go to the expense of promoting special Acts of Parliament for the purpose. It was extremely important to become acquainted with the local Acts in force in any district in which it was proposed to commence building. All authorities had powers to make by-laws, and such by-laws, when properly made, had the same effect as an Act of Parliament. It was often overlooked both by local authorities and owners, that by-laws cannot be waived by the authority making them, unless the by-laws give a dispensing power or discretion. In the case of *Yabbicom v. King* (1899) it was expressly held that a local authority empowered to make by-laws relating to buildings has no power to sanction plans contravening such by-laws.

Except in the Town Planning Act of 1909, in no statute was a local authority given the right to determine how an owner was to develop an estate. Their powers were confined to the laying-out of the streets, sewerage, erection of

buildings, and so on. The Local Government Board had framed a model series of by-laws for the guidance of local authorities, and these had lately been revised in order to make them more elastic in their requirements, and some of the provisions of the revised regulations were as follows:—Principal streets with carriageways to have a minimum width of 36 feet; but, as a fact, by-laws nearly always required 40 feet streets. All principal or front roads over 100 feet in length must be carriage roads. Secondary or back roads must have a minimum width of 16 feet if over 100 feet long, or, if shorter, a width of 13 feet. He also referred to sections relating to plans, penalties, &c., and indicated the class of information that a local authority requires, but which varied in the different districts.

By-laws in regard to sewage in new streets have not yet been embodied in the model series, the reason given by the Local Government Board being that such by-laws are so dependent upon the varying conditions of each locality that the authorities have ample powers under existing Acts to deal with this matter. This referred to powers conferred by section 150 of the Public Health Act, 1875, and the Private Street Works Act 1892, which enabled the local authority to require the owners to pave and sewer a street. As to plans submitted, the lecturer emphasised the point that the duty of a local authority is to approve or disapprove, and they cannot take exception on points such as the title of the land, or that the proposed building is unsuitable to the locality and would tend to depreciate the character of the surrounding property. If a local authority refused consent to plans which complied with the by-laws, the owners could take proceedings for a *mandamus*. It was, however, almost impossible to obtain a *mandamus* to compel an authority to pass plans, as there were so many points in connection with streets and buildings in respect of which a local authority may contend that they have exercised a bona-fide discretion, and this contention had been successfully put forward as an answer to proceedings for a *mandamus*. This point was raised in *Smith v. Chorley R.D.C.* (1897). Here, although a jury found for the plaintiff, judgment was entered for the Council on the ground that they had in good faith refused to pass the plans, and that no action would lie to compel them to pass the plans.

The question of "What is a new street?" within the true meaning of by-laws made under section 157 of the Public Health Act 1875 was discussed. Section 4 of that Act defines it as including any highway, public bridge (not being a county bridge), any road, lane, footway, square, court, alley, or passage, whether a thoroughfare or not. This, said Mr. Naldrett, was capable of a very wide interpretation. In the case of *Robinson v. Barton Eccles L.B.* (1883), L.R. 8 App. Ca. 798, Lord Selborne said that the interpretation of a clause of this kind was not meant to prevent the word receiving its ordinary appellation; and that the natural and popular sense of the words "new street" would include a roadway with buildings on either side, perhaps not necessarily continuous. It would seem, therefore, that if an owner in laying out an estate brought into existence a way and dedicated it to the use of the public, or if he made any roadway, footway, or passage, whether a thoroughfare or not, he was bringing into existence a new street, and as such it must be constructed in accordance with the local by-laws. But there was another way of bringing a new street into existence, and which frequently happened. Take the case of land proposed to be dealt with for a building estate, and that it had an existing way over it which was repairable by the local authority. Assume it was a narrow road or lane less in width than was required by the by-laws for new streets. As the building estate develops it may be intended to erect buildings abutting upon it. The carrying out of this intention had the effect of completely changing the character of the old road or lane, and it had been said that in these circumstances you would be laying out the old road as a new road within the meaning of the by-laws, and therefore the owner came under an obligation to make it of by-law width. The leading case on this subject was *Robinson v. Barton Eccles Local Board*, already referred to, and which was finally determined in the House of Lords. Mr. Robinson proposed to build on land abutting on such a lane, and one of the questions asked the Court was as to whether the part upon which he proposed to build was a new street within the meaning of the term as used in the Public Health Act. The House of Lords held that the lane in question had become a new street. The result of this decision was that it remained a question of fact in each case as to whether what had been done had converted an old road into a new street or not. Cases of this character were frequently before the Courts until 1903, but as the result of a

judgment by Mr. Justice Joyce in *Devonport Corporation v. Ozer* (1903), 1 Ch. 759, the number had diminished. This judgment was of the utmost importance to the owners of estates as well as to local authorities. In this case the owners of an estate purchased a piece of land in the shape of a triangle, two sides of which were bounded by public highways, neither of which were of by-law width, and erected upon certain houses. But they did not remove the fences which bordered the roadway, and left openings here and there for the occupants of the houses to come and go. They did not attempt to alter or interfere with the roadway in any manner. It was held that the owners by what they did were not laying out a new street. Lord Justice Romer, in the Appeal Court, said that the by-laws contemplated something to be done in the nature of a physical laying-out and not a mere metaphorical laying out, on the land which it was said would be a street. This decision has been followed in other cases.

In his final remarks the lecturer dealt with the *Metro-polis* in regard to depositing plans of streets, consents, &c., all of which is given in detail in the *London Building Act*, which he referred his audience. He also briefly described the constitution and functions of the *Tribunal of Appeal* which came into existence under the *London Building Act*.

Sir **HOMEWOOD CRAWFORD**, in proposing a vote of thanks, asked the lecturer to refer to the *Michael Angelo* Taylor's Act in a subsequent lecture. He said that at the present moment the *City Corporation* were engaged in widening *Fleet Street* and *Bishopsgate Street*, and he was amazed at the ignorance of certain members of his own profession in dealing with that Act. Some of them were not aware of its existence. It was very important to know that under this Act many widenings could be carried out without seeking further Parliamentary powers. In the *City* this was being done and property was being acquired.

In answer to a few questions, Mr. Naldrett said that the responsibility for providing sewers rested with the local authority. In regard to the *Devonport* case, owners were now very careful to shelter themselves behind the words of Lord Justice Romer and not to do anything in connection with their buildings which might be regarded as a physical tying-out of land as a street, unless it was an advantage to them to do so. In the case of a local authority wishing to set back a building after it is pulled down outside the *Metro-polis*, compensation might be payable.

TRADE NOTES.

A BOLD guarantee of 500 years is given in the advertisement in our columns of the bricks that are being used at *Quarr Abbey*, near *Ryde*, and of which *Shanklin Catholic Church* and the churches of the *Jesuit Fathers* at *Leeds* and *Tamford Hill* are being erected or completed, and which are also used in several other buildings up and down the country. The severe tests to which the bricks have been submitted by the *Belgian Government* prove them to be of almost everlasting durability, and many houses and public buildings have been erected and old structures restored with them in *Belgium*. These bricks have won eleven prizes out of twelve in a first competition—the first five and the last six—and all twelve in a second competition—fifty-nine competitors. For public works the bricks are all that can be desired.

THE electric-lift equipment at the new *Post Office* at *King Edward Buildings*, *Newgate Street*, is of a specially important character. We give on another page a report of the paper describing the building read by Sir *H. Tanner*, *S.O.*, on Monday last at a meeting of the *Royal Institute*. These buildings are fitted with the most up-to-date machinery appliances. The lift equipment has been carried out by Messrs. *R. Waygood & Co., Ltd.* There are twelve large lifts in the various departments. The special feature of the installation is that it is worked from three-phase alternating current produced at the generating station of the *General Post Office*. One of the lifts is a passenger lift capable of raising a load of 20 cwt. a height of 94 feet at a speed of 200 feet per minute; and of the remaining principal lifts five are arranged for loads of 30 cwt. and two for 10 cwt. at the same speed, while the biggest lift takes 5 tons at 60 feet per minute. The cages of the big goods lifts average about 8 feet square, and are very strongly constructed with steel angle framing and steel channel suspension bars. All the cages are fitted with *Waygood's* special passenger safety gear, arranged underneath the cage so as to take the whole of the weight in case of failure of suspension ropes. The larger lifts are fitted with four steel wire sus-

pension ropes connected to cage and four separate steel wire ropes connected to counterbalance weight, the lighter lifts having two ropes instead of four. Among the special features introduced by Messrs. *Waygood & Co.* are the controlling system, the motors, a new slowing-down arrangement for the heavier lifts, and the worm and wheel gear. The counterbalance weights are, of course, specially heavy, and these, as well as the cages, are fitted with safety gear. The whole of the apparatus was subjected to severe tests by the engineers to the *Post Office*, and the work was carried out to their satisfaction.

MESSRS. *SHAW & SONS*, 7, 8, and 9 *Fetter Lane*, *E.C.*, rightly claim to be experts in furnishing and fitting offices with all time-saving modern appliances. Their right to the title is borne out by their "Catalogue of Office Furniture and Supplies." In the "Facile" vertical filing system the correspondence is filed either numerically, alphabetically, or geographically. It is offered to professional and business men as the ideal method of dealing with correspondence. The "Eureka" loose leaf account book is worked by a simple mechanism on the screw-lever principle, which gives a firm grip of the leaves, while they can be easily added or taken away when the locking device is released. Another speciality to which attention may be drawn is the "British" file, enabling letters to be easily removed or inserted without disturbing the papers already on file. The catalogue includes a large number of other aids to the scientific and successful conduct of business.

VARIETIES.

SOME weeks ago we mentioned that a dispute as to prices between granite merchants and agents for *English* and *Colonial* markets had seriously interfered with the *Aberdeen* granite-cutting and polishing industry. Prices had been cut to a very fine point, and the agents, complaining that the workmanship produced was not up to the former standard, endeavoured to still further reduce prices. The *Aberdeen Granite Association* resisted this, and the agents stopped placing orders. The merchants were firm, however, and at a meeting of the *Association* last week a list of prices for the home and colonial markets was approved. In the meantime a similar dispute with *American* and *Canadian* agents has been practically settled, and orders to the extent of about 10,000/. have been placed in *Aberdeen* during the past three weeks. It is expected that early next month all the orders for spring delivery will be in the hands of the merchants.

UNDER the instructions of the *Bank of England* and of the trustees of the will of the late Mr. *Robert Jackson Bates*, Messrs. *Field, Sons & Glasier*, of *London Bridge* and *Waterloo Place*, have effected a sale to the trustees of a fund for the housing of the working classes of the extensive island site in *Rodney Road*, *Walworth*, which occupies a ground area of over 61,000 feet, and has frontages of over 1,000 feet to *Rodney Road* and the contiguous streets. It will be remembered that the property was submitted at auction by Messrs. *Field, Sons & Glasier* in July last, when it was bought in on behalf of the vendors at the sum of 22,000/. From information supplied by the secretary of the fund we understand that according to the present intentions of the governors it is proposed to develop the site by the erection of nine blocks of artisans' dwellings, containing each 20 tenements, and affording accommodation for over 600 persons. As the property is within a close radius of the large *Tabard Street* area, which the *London County Council* are about to clear, it is hoped that these new dwellings, when erected, will assist in solving the re-housing problem which will be presented by the *Council's* demolition scheme.

THE *Glasgow Corporation* have under consideration a scheme for the reconstruction and enlargement of the premises occupied by the *Royal Glasgow Institute* of the *Fine Arts*. A sketch plan prepared by the *City Engineer* shows that the proposed scheme involves the demolition of the back portion of the buildings and three of the tenements on the south side of *Renfrew Street* recently purchased by the *Corporation*, and also the erection of new buildings upon the cleared site, providing a suite of nine large intercommunicating galleries. In the proposed new premises the total floorage space, including the basement, will be 20,280 square feet. The estimated cost is 20,000/.. The cost of the three tenements to be demolished is stated at 5,725/., and the value of the portion of the site occupied by the present galleries is given at 5,700/.. If the scheme is adopted the premises will be let at a rental of 1,050/. a year to the *Royal Glasgow Institute*.

Building

OLYMPIA



OLYMPIA

Offices: 43 Essex Street, Strand, W.C.

Exhibition

THE Architect and Contract Reporter.

FRIDAY, JANUARY 13, 1911.

Published weekly, subscription 19s. per annum for Great Britain, and for Colonial and Foreign subscriptions £1 6s. 6d. all business communications to the Managing Director,

P. A. GILBERT WOOD,

Publishing Offices, 6-11 Imperial Buildings, Ludgate Circus, London, England.

Telephone No. 4725 Holborn.

Branch Offices at 43 OLD QUEEN STREET, S.W., Messrs. W. HAY FIELDING & CO. being the representatives for all business purposes.

The Birmingham Offices are at 102 COLMORE ROW.

Entered in the United States of America as second-class matter.

AGENTS FOR AMERICA:

International News Co., 5 Bream's Buildings, Chancery Lane, London, England, and New York.

AGENTS FOR CANADA:

Messrs. WM. DAWSON & SONS, Ltd., 91 Church Street, Toronto, to whom all correspondence for Subscription and Advertising Rates should be made.

Subscription \$5.20.

AGENTS FOR AUSTRALIA, NEW ZEALAND AND TASMANIA:

Messrs. GORDON & GOTCH, Melbourne, Sydney, Brisbane, and Perth, Australia; Wellington, Christchurch, and Auckland, New Zealand; Launceston and Hobart, Tasmania.

SOUTH AFRICA: Central News Agency, Ltd.

NOTICE TO ADVERTISERS.

In no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

Special Position Spaces.—Unless ordered for weekly insertions the Proprietors cannot guarantee particular dates.

EDITORIAL NOTICES.

Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit the insertion of lengthy communications.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

* * As great disappointment is frequently expressed at the nonappearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

ARGENTINE.—April 20.—A competition of plans for a hospital and school of medicine, to be erected at Rosario in celebration of the Argentine Centenary at a cost of about 149,000*l*. Prizes of 1,050*l*., 700*l*. and 440*l*. will be awarded. A copy of the conditions, &c., may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, London, E.C., where also a limited number of copies are available for distribution. Plans must be sent to the "Secretaria de la Comisión Pro-Hospital é Instituto de Enseñanza Médica del Centenario, Calle Córdoba 1230," Rosario.

ATHENS.—Aug. 21.—An international competition of plans is invited by the Greek Ministry of the Interior (Public Works) for the erection of a Court of Justice at Athens. The cost of the building must not exceed 160,000*l*. A first prize of 800*l*., and a second prize of 320*l*. will be awarded. The Greek Official Gazette, containing particulars (in Greek and in French) may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

BRADFORD.—The Board of Management of the Bradford Infirmary invite plans with estimates for a new infirmary in Duckworth Lane. Mr. Keith Young, F.R.I.B.A., will act as assessor. Deposit 3*l*. 3s., which will be refunded on receipt of a bona-fide design or if block plan, instructions, &c., are returned within a month after receipt of replies to competitors' questions. The Secretary Superintendent of the Royal Infirmary, Bradford. (For further particulars see advertisement.)

COVENTRY.—April 1.—The Corporation contemplate the erection of municipal offices in the centre of the city, and also possibly a town hall, and accordingly invite competitive designs. Mr. E. Guy Dawber, F.R.I.B.A., will act as assessor. Deposit 2*l*. 2s., which will be refunded on receipt

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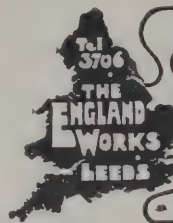
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a bona-fide design or if the particulars are returned within fourteen days of receipt. Mr. Geo. Sutton, town clerk, 10 Hay Lane, Coventry. (For further particulars see advertisement, November 18.)

CUBA.—April 15.—An international competition has been arranged for a Presidential Palace to be erected at Havana at a cost of about 205,000*l*. Premiums of 10,000 pesos and 100 pesos will be awarded. Conditions may be seen at the Cuban Legation, 3 Grosvenor Mansions, Victoria Street, W., or the Commercial Intelligence Branch of the Board Trade, 73 Basinghall Street, E.C.

DEPTFORD.—Jan. 18.—The Deptford Borough Council invite architects practising in the City or County of London to submit designs for the Deptford Central Library, to send not later than Jan. 18, particulars of similar work carried out by them. Premiums of 50*l*., 30*l*., and 20*l*. will be awarded in the subsequent competition among twelve selected architects. Mr. Vivian Orchard, Town Clerk, Town Hall, New Cross Road, S.E. (For further particulars see advertisement, Jan. 6.)

GLASGOW.—Jan. 31.—The Corporation invite plans of a proposed branch library at the corner of Saracen Street and Lander Street, Possilpark. Premiums of 50*l*., 30*l*. and 10*l*. will be awarded. A plan of the site and conditions may be obtained free from Mr. A. W. Myles, town clerk, City Chambers, Glasgow.

HULL.—Feb. 1.—The Guardians of Sculcoates Union invite competitive designs for a suite of offices in Margaret Street, Hull. Premiums of 10*l*. 10*s*., 6*l*. 6*s*., and 4*l*. 4*s*. will be awarded. Mr. J. H. Wild, clerk to the Guardians, 12 Arley Street, Hull.

LEICESTER.—The Corporation invite architects practising in Leicester to supply plans, designs, and estimates for a public hall to be erected adjoining the Victoria Park and Regent Road. Premiums of 100*l*., 50*l*., and 25*l*. will be awarded. Deposit 1*l*. 1*s*. Mr. E. G. Mawbey, M.Inst.C.E., Town Hall, Leicester.

LLANDRINDOD WELLS.—The Urban District Council invite competitive plans for a pavilion in the recreation ground. First and second premiums will be awarded by an assessor. Mr. D. C. Davies, clerk, Llandrindod Wells.

MANCHESTER.—March 31.—The Corporation invite designs for a Library and Art Gallery upon the Piccadilly in the centre of the city. The Preliminary Competition closes March 31. The authors of ten selected designs will compete in the Final Competition. Mr. Reginald Blomfield, F.R.A., will act as assessor, in connection with the city architect. Apply for particulars to Mr. Thomas Hudson, Town Clerk, Town Hall, Manchester. (For further particulars see advertisement, January 6.)

PENISTONE.—Competitive plans and specifications are invited for a "Carnegie" Free Library. The Clerk to the District Council, Penistone.

ROMFORD.—The Town Planning and Modern House and Cottage Exhibition at Gidea Park, Squirrels Heath, in the Romford Garden Suburb, summer 1911. Class IV.—Town Plan of Gidea Park—prizes of 100*l*. and 50*l*. Class VII.—Open to builders. For excellence of workmanship and construction in the erection of a cottage in Class I. or II.—first prize, gold medal and 100*l*.; second prize, 50*l*. Final dates for designs; Class IV., March 31, 1911. Mr. Michael Tunney, A.R.I.B.A., hon secretary, 33 Henrietta Street, Strand, W.C.

SALE.—Jan. 21.—The Sale and Ashton-upon-Mersey District Administrative Sub-committee for Education invite architects practising within a radius of twenty miles of Manchester to make application by Jan. 21 for a limited competition for a proposed higher elementary school at Sale to accommodate about 250 children. Mr. W. Taylor, clerk, Public Free Library and Technical School, Sale, Cheshire.

SALFORD.—Jan. 16.—The Education Committee invite architects in Salford and Manchester desirous of competing for a proposed secondary school for boys in Leaf Square, to send in their names by Jan. 16, together with statement of works carried out. Mr. L. C. Evans, town clerk, Town Hall, Salford.

CONTRACTS OPEN.

BLACKBURN.—Jan. 26.—For alterations and additions to the County Court. The Registrar, County Court, Blackburn.

BURNLEY.—Jan. 17.—For the whole or any of the trades required in the erection of an out-patients' block, and alterations to the old, at the Burnley and District Hospital. Forward names and 10*s*. 6*d*. deposit by Jan. 17, to Mr. Wm.

Arthur Quarmby, architect, 2 Imperial Chambers, Grimshaw Street, Burnley.

CARLETON.—Jan. 25.—For erection and completion of a cottage home at Carleton, near Pontefract. Deposit 10*s*. Messrs. Garside & Pennington, architects, of Pontefract and Castleford.

CATERHAM VALLEY.—Jan. 23.—For erection of Council offices and hall. Deposit 1*l*. 1*s*. Mr. H. R. Martin, surveyor, Council Offices, Caterham Valley, Surrey.

CHARLTON KINGS.—Jan. 28.—For erecting cloakrooms at Charlton Kings Council school. Deposit 2*l*. 2*s*. Mr. R. S. Phillips, architect, Midland Bank Chambers, Gloucester.

CUDWORTH.—Feb. 9.—The West Riding education committee invite whole or separate tenders for the following works at Snydale Road Council school, Cudworth, viz.:—Drainage and conversion of offices (builder and plumber). The Education Architect, County Hall, Wakefield. Send 1*l*. deposit to the West Riding Treasurer, County Hall, Wakefield.

DARTFORD.—Jan. 30.—For painting and repairs to be done at the staff quarters at the Infectious Diseases Hospital, Bow Arrow Lane. Send names and 2*l*. 2*s*. deposit by Jan. 20 to Mr. Robert Marchant, A.R.I.B.A., 28 Theobald's Road, London, W.C.

DARLINGTON.—Jan. 18.—For the whole or any portion of the various works in the reconstruction of premises in Printing House Square, occupied by Messrs. W. E. Dove & Co., Ltd., and others. Messrs. Hoskins & Brown, architects, Court Chambers, Darlington.

DERBY.—Jan. 19.—For the erection of additional County Offices in St. Mary's Gate. Deposit 3*l*. 3*s*. Mr. Geo. C. Copstick, Lic.R.I.B.A., County Offices, St. Mary's Gate, Derby.

DEVONPORT.—Jan. 20.—For extension of Devonport Post Office, for the Commissioners of H.M. Works and Public Buildings. The Postmaster, Devonport.

DONCASTER.—Jan. 17.—The West Riding standing joint committee invite whole or separate tenders for alterations, &c., to Doncaster Court House (builder, joiner, slater, plumber, plasterer, painter). Send 1*l*. deposit to the West Riding Treasurer, County Hall, Wakefield. Mr. J. Vickers Edwards, West Riding architect, County Hall, Wakefield.

DORCHESTER.—Jan. 25.—For erection of police cells in Glydepath Road. The County Surveyor's Department, Dorchester.

DRONFIELD.—Jan. 28.—For widening School Lane, setting back wall and demolishing four houses. Deposit 2*l*. 2*s*. Mr. T. H. Atkinson, surveyor, Council Offices, Dronfield.

DURHAM.—Jan. 17.—The Durham County Council invite tenders for alterations and improvements at Wingate and Chester Moor Council schools. Mr. N. Richley, Shire Hall, Durham.

EAST ARDSLEY.—Jan. 31.—For erection of sliding partition in East Ardsley school, Yorks. Mr. A. Angus, W.R. Education Office, Wakefield.

EASTBOURNE.—Jan. 16.—For erection of additional buildings to the air compressing station at Roselands. Mr. A. Ernest Prescott, borough engineer and surveyor, Town Hall, Eastbourne.

ENGLISHCOMBE.—Jan. 23.—For erection of two cloakrooms and the execution of certain alterations and repairs at the Council schools, Englishcombe, near Bath. Mr. W. F. Bird, M.S.A., Midsomer Norton, Somerset.

EPPING.—Jan. 14.—For erection of an infirmary and master's house, together with contingent works, at the Epping workhouse, Essex. Deposit 2*l*. 2*s*. Messrs. Tooley & Foster, architects, Queen's Road, Buckhurst Hill.

FARNHAM.—Feb. 6.—For alterations and additions to existing drill hall premises, Bear Lane, for the Surrey Territorial Force Association. Messrs. Jarvis & Richards, architects to the Association, 10 Queen Anne's Gate, Westminster, S.W. Send names and 1*l*. 1*s*. deposit by Jan. 23 to Messrs. Robinson & Roods, quantity surveyors, 8 New Court, Carey Street, Lincoln's Inn, W.C.

GRASSINGTON (YORKS).—Jan. 17.—The West Riding standing joint committee invite whole or separate tenders for the erection of Grassington new police station, viz., builder, joiner, slater, plumber, plasterer, painter, asphalt. Send 1*l*. 1*s*. to the West Riding Treasurer, County Hall, Wakefield. Mr. J. Vickers Edwards, West Riding architect, County Hall, Wakefield.

HENNOCK.—Jan. 17.—For erection of 60 cottages at Hennock, Devon, for the Teign Valley Granite Co., Ltd. Deposit 3*l*. 3*s*. Messrs. S. W. Haughton & Son, surveyors, 22 Courtenay Street, Plymouth.

HEYWOOD.—Jan. 27.—For erection of the proposed Heap Bridge Council school, for the Heywood Town Council. Send names and 3l. 3s. deposit by Jan. 14 to Mr. H. Cooper Anderson, A.R.I.B.A., M.S.A., architect and surveyor, 3 Longford Street, Heywood.

IRELAND.—Jan. 21.—For erection of forty-two labourers' cottages and fencing of one acre plots thereto, at a cost not exceeding 140l. per cottage and plot, for the Bandon Rural District Council. Deposit 5s. Mr. A. Haynes, clerk to the District Council, Bandon.

IRELAND.—Jan. 24.—For rebuilding shop, warerooms, &c., recently destroyed by fire at Edgeworthstown. Mr. P. Menton, architect, Newtown, Moate.

IRELAND.—Feb. 6.—For erection of a store at their Longford Station, for the Midland Great Western Railway of Ireland Co. Charge 5s. The Chief Engineer, Broadstone Station, Dublin.

ISLE OF WIGHT.—For the repairs to the tower of St. James's Church, Yarmouth, Isle of Wight. Messrs. Harry Mills & Sons, Yarmouth, Isle of Wight.

ISLE OF WIGHT.—Jan. 18.—For the construction of a new high-level landing stage to the Royal Victoria Pier, for the Ventnor Urban District Council. Deposit 2l. 2s. Mr. H. Hughes Oakes, engineer and surveyor, Town Hall, Ventnor, Isle of Wight.

KNOTTINGLEY.—Jan. 28.—For alterations and additions to Church schools, Knottingley, Yorks. Forward names by Jan. 15 to Messrs. Tennant & Collins, architects and surveyors, Pontefract.

LONDON.—Jan. 18.—The Metropolitan Asylums Board invite separate tenders for the following work:—(1) Mess-room for charge nurses at the North-Western Fever Hospital, Lawn Road, Hampstead, N.W. (2) Erection of verandahs at the Children's Infirmary, Carshalton, Surrey. (3) Erection of greenhouse and potting-shed at the Children's Infirmary, Carshalton, Surrey. Deposit 1l. 1s. each contract. Mr. W. T. Hatch, M.Inst.C.E., M.I.Mech.E., engineer-in-chief, the Office of the Board, Embankment, E.C.

LONDON.—Jan. 24.—For the supply and erection of two external iron fire escape staircases and the formation of new exit doors at the Children's Infirmary, Crown Hill, Upper Norwood, S.E., for the Lambeth Board of Guardians. Deposit 2l. Mr. James L. Goldspink, Guardians' Board Room and Offices, Brook Street, Kennington Road, S.E.

LONDON.—Jan. 24.—For erection of sanitary conveniences, Victoria Dock Road, adjoining Custom House Station, for the West Ham Town Council. Deposit 1l. Mr. John G. Morley, borough engineer, Town Hall, West Ham.

LYDBROOK.—Jan. 28.—For the carrying out of alterations and additions to Joys Green Council school, near Lydbrook. Deposit 2l. 2s. Mr. R. S. Phillips, architect, Midland Bank Chambers, Gloucester.

MANCHESTER.—Jan. 19.—For the erection of a lodge at Brookdale Park. Deposit 1l. 1s. with the City Treasurer. The City Architect, Town Hall, Manchester.

MAIDENHEAD.—Jan. 30.—For the erection of administrative and laundry buildings at the Isolation Hospital. Deposit 1l. 1s. Mr. Percy Johns, borough surveyor, Guildhall, Maidenhead.

MARGATE.—Jan. 30.—For the general builder's work in the erection of a large concert hall with arena and colonnade at the Fort. Deposit 5l. 5s. Mr. Ernest A. Borg, borough engineer, 13 Grosvenor Place, Margate.

MOULSFORD (Berks.).—Jan. 18.—For the erection of a terrace of six cottages at Moulford, for the Committee of the Berkshire Lunatic Asylum. Deposit 1l. Mr. W. R. Howell, F.R.I.B.A., 17 Blagrove Street, Reading.

OLD SODBURY.—Feb. 1.—For carrying out alterations and enlargement of Old Sodbury school (Glos.). Mr. W. C. Willcox, Old Sodbury House, near Chipping Sodbury.

PONTELAND.—Jan. 18.—For erection of a corrugated iron building at the Cottage Homes, Ponteland, Northumberland. Mr. Gladstone Walker, clerk, Union Offices, 127 Pilgrim Street, Newcastle-upon-Tyne.

POSTBRIDGE.—Jan. 16.—For erection of a bungalow at Postbridge, Devon. Deposit 1l. 1s. Mr. Josias C. Beare, A.R.I.B.A., architect, 42 Devon Square, Newton Abbot.

ROSE GROVE.—Jan. 18.—The directors of the Lancashire and Yorkshire Railway are prepared to receive tenders for the restoration of the roof and floor of the goods warehouse at Rose Grove, near Burnley. The Engineer's Office, Hunt's Bank, Manchester.

SCOTLAND.—Jan. 17.—For the mason, carpenter, plumber, slater, painter and glazier, and plaster works of house and shop to be erected at Spey Bay. Mr. Wm. Hendry, architect, 91 West Church Street, Buckie.

SCOTLAND.—Feb. 1.—The Royal National Lifeboat Institution invite tenders for the construction of a corrugated steel and timber lifeboat house and solid concrete and reinforced concrete (Considere system) slipway near the entrance to the South Harbour, Peterhead. Deposit 1l. Mr. Robert Gray, local hon. secretary, Peterhead, Aberdeen shire, or Mr. W. T. Douglass, M.Inst.C.E., 15 Victoria Street, Westminster, S.W.

SOUTHEND-ON-SEA.—Jan. 17.—For alterations and additions to the existing barn at Chalkwell Park, to be used as a battery storage room, in connection with their electric light undertaking. Deposit 1l. 1s. Mr. Ernest J. Elford, M.I.M.E., borough engineer and surveyor, Southend-on-Sea.

SMETHWICK.—Jan. 16.—For the erection of new mission church of St. Dunstan, Bearwood, Smethwick. Deposit 1l. 1s. Mr. S. N. Cooke, architect, 33 Newhall Street, Birmingham.

STIBBARD (NORFOLK).—Jan. 14.—For erection of proposed Wesleyan Church at Stibbard, Norfolk. Messrs. A. F. Scott & Son, architects, 24 Castle Meadow, Norwich.

STOKE-UPON-TRENT.—Jan. 18.—For works of alterations and adaptation to the old Administrative block at the Spital's Workhouse. Deposit 1l. 1s. Mr. A. R. P. Piercy, architect, Union Offices, Stoke-upon-Trent.

TARVIN.—Jan. 18.—For alterations and additions to the County Police Station, Tarvin, Cheshire. Deposit 1l. Mr. H. Beswick, F.R.I.B.A., county architect, Newgate Street, Chester.

TICKHILL.—For erection of seven cottages at Tickhill. Mrs. Swindin, Westgate, Tickhill, Yorks.

TINSLEY.—Jan. 18.—For the following works in connection with the recreation ground, viz., construction of conveniences, making ornamental gardens and planting of shrubs and trees, &c. Mr. J. L. Winkley, clerk, 15 Harrowden Road, Tinsley, Sheffield.

WALES.—Jan. 14.—For provision of lavatory accommodation for male guardians at the Cardiff workhouse. Mr. Edwin Seward, F.R.I.B.A., Queen's Chambers, Cardiff.

WALES.—Jan. 17.—For alteration of premises for the Duffryn Co-operative Society, Ltd., Mountain Ash. Messrs. Morgan & Elford, architects, Mountain Ash.

WALES.—Jan. 18.—For erection of twenty-five or more houses, together with the construction of roads, sewers, surface water drains, &c., at Aberfan, for the Pleasant View Building Club. Mr. O. P. Bevan, architect and surveyor, Express Chambers, Merthyr Tydfil.

WALES.—Jan. 19.—For making additions to the Institute at Carnarvon. Mr. Rowland Lloyd Jones, architect, 14 Market Street, Carnarvon.

WALES.—Jan. 21.—For building a dwelling-house at Blaenporth. Mr. David Kane, 35 Fern Street, Moun Pleasant, Porth, Glam.

WALES.—Jan. 21.—For erection of new Council school at Brynaerau, Clynog; and Fourcrosses, Carnarvon. Mr. Rowland Lloyd Jones, county architect, 14 Market Street, Carnarvon.

WALES.—Jan. 23.—For erection of a residence at Tylorstown. Deposit 1l. 1s. Messrs. A. O. Evans, William & Evans, architects, Pontypridd.

WALES.—Feb. 1.—The Royal National Lifeboat Institution invite tenders for the construction of a corrugated steel and timber lifeboat house, reinforced concrete (Hennibique system) slipway and reinforced concrete and steel approach gangway at Fryar's Weir, near Beaumaris, in the County of Anglesey. Deposit 1l. Mr. James Hartley Burton, local hon. secretary, Fryars, Beaumaris, or Mr. W. T. Douglass, M.Inst.C.E., 15 Victoria Street, Westminster, S.W.

WALTHAMSTOW.—Jan. 17.—For carrying out the following works, for the Walthamstow Education Committee:—(a) Girls' School, Higham Hill, the erection of a new block of out-offices, removal of existing offices, new iron fencing, and sundry other works; (b) Longfield Avenue site, the provision and erection of about 1,250 feet run of wrought iron unclimbable fencing, with dwarf wall to frontage portion; gates, pillars, and sundry works. Mr. H. Prosser, M.S.A. architect, Education Committee Offices, High Street, Walthamstow.

WINGATE AND CHESTER MOOR.—Jan. 17.—The Durham County Council invite sole tenders for alterations and improvements at Wingate and Chester Moor Council school. Mr. N. Richley, Shire Hall, Durham.

WORTHING.—Jan. 17.—For erection of an ambulance shed at the Corporation Yard, High Street. The Borough Surveyor, Municipal Offices, Worthing.

TENDERS.

BIRKENHEAD.

For carrying out the works in connection with the removal of peat from the site of the Alwen Reservoir, and the construction of the reservoir and masonry dam, embankments, &c., for the Birkenhead Town Council.

MCALPINE & SONS, Victoria Street,
Westminster (accepted) £186,153 15 3

CLACTON-ON-SEA.

For construction of 550 feet stone wall on the West Beach, for the Urban District Council.

Webb & Co.	£4,531 14 1
Muirhead & Co.	4,500 0 0
Cochrane & Sons	4,187 16 11
Wimpey & Co.	3,893 0 0
G. Bell & Sons	3,698 0 0
May	3,642 15 2
W. Bell & Sons	3,634 0 0
Gradwell & Co.	3,586 4 10
Brebner & Co.	3,526 0 0
PEDRETTE (accepted)	3,277 11 2

LONDON.

For the erection of stabling, rear of 3 Perry Vale, for Messrs Edwards & Sons, dairymen. Messrs. NORFOLK & PRIOR, architects, Catford Bridge.

Christmas	£260 0 0
Bliss Bros.	257 0 0
Walker	223 16 0
WATT (accepted)	220 0 0

For alterations and additions to the steward's offices at the Northern (Convalescent) Fever Hospital, for the Metropolitan Asylums Board. Mr. W. T. HATCH, M.I.C.E., M.I.M.E., engineer-in-chief.

Jewell	£362 0 0
Reason	349 0 0
Nightingale	319 0 0
Stevens & Sons	298 0 0
Kazak	252 0 0
Eyles	243 0 0
ORAM & SON, Waltham Abbey (accepted)	229 10 0

NEWTON ABBOT.

For the erection of additional wards at the Workhouse Infirmary. Mr. SAMUEL SEGAR, architect, Newton Abbot.

Pollard & Co.	£4,160 0 0
Parker Bros.	4,150 0 0
Blake	4,070 0 0
Yeo & Sons	3,939 0 0
Gluyas	3,800 0 0
Badcock	3,770 0 0
Zealley	3,755 17 0
Coles	3,700 0 0
Mills	3,499 0 0
Stacey	3,496 15 0
Rowse & Co.	3,402 0 0
Wilkins & Sons	3,295 0 0
Bovey & Son, Torquay (accepted provisionally)	3,074 0 0

SCOTLAND.

For carrying out the new Cameron Burn water scheme for the St. Andrew's Town Council.

Contract No. 1.—reservoir.

KINNIBURGH (accepted) £15,063 6 0

Contract No. 2.—supply of iron pipes.

McFARLANE, STRANG & Co. (accepted) 2,107 10 6

Contract No. 3.—laying pipes.

BRYCE (accepted) 517 10 11

WIRRAL.

For the making-up of Prospect Road, Prenton, Chester, for Wirral Rural District Council. Mr. T. DAVIES, surveyor, Heswall.

Davies & Gaskell	£1,080 11 9
Marr & Son	943 17 1
W. F. Chadwick, Ltd.	893 2 5
Harris	873 5 8
Warren	872 10 7
Devaney	850 12 0
Ratcliffe	836 2 0
MEIKLE, Liverpool (accepted)	785 11 4

VARIETIES.

New police stations are to be erected by the East Riding authorities at Walton, Brough, and Market Weighton.

It is proposed to build a Conservative and Unionist Club at Reeth, Yorkshire, near the Buck Inn. The site has been purchased and a working committee formed.

THE Worthing Town Council have arranged a loan of 2,600*l.* at 3½ per cent. for the purchase of Gloucester Lodge as a site for municipal buildings.

PLANS have been passed by the Coatbridge Dean of Guild Court for an extension of the cookery school in Kildonan Street, the estimated cost being 1,500*l.*

THE Blackburn Town Council have approved a draft Parliamentary Bill for the construction of two additional reservoirs to increase the town's water storage by 30 days' supply.

A COMMITTEE has been formed with the object of erecting a church hall at Holyhead at an estimated cost of 2,000*l.* Of this sum there is already 900*l.* in hand, and over 100*l.* promised.

IN the recent competition held for the York Road schools, Battersea, the designs submitted by Messrs. George Baines & Son, 5 Clement's Inn, Strand, London, W.C., have been placed first, and the work is to be proceeded with at once.

THE designs submitted by Messrs. George Baines & Son, 5 Clement's Inn, Strand, London, W.C., have been adopted for the proposed Congregational schools and institute at Reddish, the estimated cost being 2,600*l.*

It is proposed to form a company to be known as the Long Sutton Tenants, Ltd., and to erect some fifteen houses at a cost of 3,000*l.* on land which has been already secured for the purpose at Long Sutton, Lincolnshire.

THE Institute of Metals, which now has a membership of over 550, will hold a two-days annual general meeting on Tuesday and Wednesday next. The business will be done and papers read at the Institution of Mechanical Engineers, Storey's Gate, S.W.

THE Local Government Board have sanctioned the loan by the Carnarvon Town Council of 2,400*l.* towards extending the Institute Building, in which is the free library, and which when completed will also include public baths and a council chamber.

A LOCAL GOVERNMENT BOARD inquiry was held last week at the County Offices, Chester, into an application of the County Council for consent to the borrowing of 19,414*l.* for the purchase of property for the purposes of the Upton pauper lunatic asylum. It is proposed to purchase the Bache estate of 87 acres, including Bache Hall.

THE Hull City Council have adopted a scheme for extending the electricity undertaking at a cost of 99,322*l.* Of this sum the estimate for buildings is 19,808*l.*, for machinery 37,297*l.*, for main extensions 20,188*l.*, for high-tension main 14,243*l.*, and for motors to let on hire 4,996*l.* It is proposed to ask for a seventeen years' loan for 91,536*l.* of the amount.

THE Cannock Urban District Council, Staffordshire, have arranged a limited competition in order to obtain plans for a new school at Bridgtown. The following architects are to be invited to send in plans for a school for 150 girls and 150 infants, with provision for adding a boys' department, if necessary—namely, Messrs. G. Wormal (Stafford), Bailey & McConnell, and Hickton & Farmer, and Mr. Evans (of Walsall), and H. Horton (of Cannock).

THE contracts for making No. 2 and No. 3 sections of the new water supply for Fraserburgh, placed recently with Mr. James Kinniburgh, contractor, Glasgow, have fallen through owing to the Town Council's terms in regard to security. Contracts Nos. 1 and 3 have, subject to further negotiations, been placed in the hands of Messrs. H. M. Murray & Co., and contract No. 2 with Messrs. Casey & Darragh. The total of the three contracts is 43,682*l.* Mr. W. Allan Carter, Edinburgh, is engineer.

THE Sanitary Inspectors' Association held a meeting in Carpenters' Hall, London Wall, on Saturday last, when Mr. Sidney Sharpe read a paper on the Amalgam system of plumbing. The lecturer claimed that with one exception this system complied with all the by-laws in force, that the work when finished had a better appearance than that now in vogue, and could be executed at a considerable reduction in cost. At the conclusion of the paper the pipes joined by this method were subjected to hydraulic and torsion tests, which amply proved that the joint was distinctly stronger than the other portion of the pipe; a selection of joints and plumbers' work was on exhibition, and was greatly admired by the members present. An animated discussion followed, during which the general trend of opinion expressed was distinctly favourable to this new system.

ART AND REGISTRATION.*

THE future of art in architecture and the professional welfare of its exponents are to a great extent in the hands of the present generation, and two policies are put forward for consideration as ameliorations of the present unsatisfactory state of affairs in art and professional practice.

The registration of architects, as has been proved by several plebiscites, is supported by the great majority of architects, who appear to consider that the reorganisation of the profession is necessary; and architectural copyright is brought forward by a section which professes to more particularly study the future of our art while protecting the interests of professional men.

The policy of registration is particularly worthy of the notice of this Society, for this Guild is described as "the only Society formed and organised by architects' assistants to protect their interests," and it is apparent that the object of this body is to ensure some sort of security to assistants in the architectural profession.

Security, that most precious jewel of civilisation, is entirely the work of law. Without law there is no security, and consequently not even a certainty of subsistence; and it follows that if this Society is not prepared to support the logical measure which will give security to the architectural profession and its individual members, it will fail in its apparent object, in one direction at least.

It has been said that registration will limit the liberty of the architect and be opposed to the welfare of art; but this contention does not appear to be well founded. Sir James Mackintosh, the eminent lawyer and essayist of the earlier portion of the last century, said: "The description of liberty which seems to me the most comprehensive is that of *security against wrong*. Liberty is, therefore, the object of all government." The registration of architects means the ultimate government of the profession by the profession to ensure *security against wrong*; but it is not only in the personal protection of the members of the profession that the policy of registration is worthy of consideration, and the probable effects of such a policy on art must be studied.

Art in architecture is acknowledged by the majority of our most prominent architects to be in a very unsatisfactory state; and the introduction of an Architectural Copyright Bill at first sight appears to be a necessary measure for the protection of the personal property and standing of the architect; but a reference (at the risk of being personal) to the published opinions of some of our leading architects on the present state of architectural art may be helpful.

The symposium on architecture recently conducted in *The New Age* by Mr. Huntley Carter is a valuable collection of opinions, which should be of great interest to all architects and artists who look at architecture and art widely; and more particularly to those who, through registration, hope to see the mistress art take a proper place in our social life. The opinions of the eminent contributors to this symposium show a general despondence as regards the progress of our art, and Mr. Mervyn E. Macartney, F.S.A., F.R.I.B.A., and Mr. Edward Warren, F.S.A., F.R.I.B.A., who contribute interesting articles, are both of the opinion that the present unsatisfactory state of art and architecture is due to the ignorance and apathy of the public.

Mr. Macartney says: "Little more can be done by architects themselves until the public expresses some sort of approbation," and also, "In London we accept all kinds of vulgar fripperies from stockbrokers turned architects."

Does it not follow that the public very naturally expresses little approbation of the vulgar fripperies of stockbroker-architects? And does it not also follow that, if "architects themselves" confine the energies of stockbrokers to stockbroking, art and architecture will benefit, and the public express some kind of approbation for the works of a profession which is a definite profession?

Mr. Macartney further says: "It would, however, have to be conceded at the outset that the general taste in this, the mistress art, is at a lower ebb than at any time even of the eighteenth century"; and, "In England up to the middle of the eighteenth century taste in architecture was fairly general. Every gentleman understood its principles, and several of them were not without ability in its practice." So that in this, the twentieth century, although we know that "the mistress art is at a lower ebb than at any time even of the eighteenth century," we have stockbrokers, auctioneers, and certificated bailiffs as ex-

ponents of the mistress art, and supplying "all kinds of vulgar fripperies" acceptable to the greatest city in the world, and this in place of the favourable atmosphere which existed in the first half of the eighteenth century.

No true architect whose desire is the welfare of his art objects to a stockbroker, auctioneer, or bailiff becoming an architect, provided that the gentleman is qualified by nature and attainments to practise the profession in keeping with the canons of art and professional etiquette; but every architect with a soul above the mere utilitarian routine of business must object to the unnecessary degradation of architecture by the works of the individuals who have given our streets their vulgar fripperies in such profusion.

The registration of architects would not necessarily make every building in our streets a work of art, but it would undoubtedly, in future years, prevent the utterly unqualified and ignorant man from practising as an architect. Mr. Macartney truly says: "A tradition in architecture cannot be built up in a day"; but, as public approbation is necessary to the progress of tradition, it is reasonable to expect that by gaining public approbation and notice through a non-controversial Registration Bill, approved by the public through their elected representatives in Parliament, further public approbation, understanding, and appreciation of the profession and its aims would follow.

Mr. Macartney says: "It is only the great gullible public who think that painters alone are capable of producing art, so they muddle along, and when they want a bit of 'art' they buy it from the painter. The assumption that painters can do architecture is doubtless based on this feeling that 'art' may be obtained in sample and applied to building—a square foot or a yard at a time."

In the first place, it is obviously the duty of architects to see that the public are not gulled, and even before "the public expresses some sort of approbation," it is possible for "architects themselves" to do much towards gaining that approbation. It is also due to the art of architecture from its exponents that approbation should be gained, and as in politics measures are supported because of the sincerity and through the personalities of their originators and supporters, so must public approbation of architecture be gained by sincerity and whole-hearted and businesslike action by its practitioners, and by keeping the importance of architecture continually in the public eye.

Architects may not advertise for their own personal benefit; but architects as a body can surely advertise the importance of their art by drawing public attention to it on every possible occasion. The Town Planning Conference has done much to convince the public of the importance of the architectural profession; but it must be remembered that the subject of town planning owes its present prominence very largely to the fact that it has been brought to the public notice through political channels, the Town Planning Bill having been commented on by every journal of importance, and the subject having all the prominence of a political measure.

It is obvious that the introduction of a Bill for the registration of architects would also attract notice and convince a large proportion of the general public of the importance of the architectural profession.

The public apathy which Mr. Macartney and Mr. Warren deplore may be in some measure due to the fact that there is no obvious care of the public interest taken by architects as a profession. The public looks after its own interests through local by-laws and surveyors, whose functions are supervisory of the architect's work; and although this is necessary, and probably always will be necessary, it has a tendency to an antagonistic feeling which is regrettable and might be somewhat relieved.

In the medical profession the diploma of public health (D.P.H.), held by so many doctors, has convinced the public that public health is made a serious study by medical men; the profession is looked up to, and the public interests in that sphere are felt to be safe in its hands.

The institution of a diploma in civil architecture might well fill a corresponding place in the architectural profession, and have the same effect in convincing the public that architects are solicitous for their well-being, by endeavouring to give them artistic and suitable as well as sanitary and well-built buildings; but such a diploma could be of little use so long as the professions of stockbroking and architecture are interchangeable.

Public approbation is necessary to the progress of art; but the public cannot be forced to appreciate art and architecture, therefore it must be led to that appreciation; and the first step likely to convince at least a large section of the public of the importance of architecture would be the initia-

* Abstract of a paper read before the Guild of Architects' Assistants, on January 10, by Mr. H. Guicharde Todd, F.S.A.Scot., M.S.A.

ion of the policy of registration, and the consequent access of dignity and standing in the public eye which that measure would confer on the members of the profession.

The benefits of such a consummation are obvious and would be twofold—beneficial to the profession and to the public; for the interests of the public, the profession and the art which it professes are inseparable. The public would be safeguarded against the practice of irresponsible or altogether ignorant practitioners, architects would have a professional standing to lose, and if this were once appreciated by the public the importance of good architectural work would be recognised.

The responsible architect, in keeping with the definition of security already given, can only be the architect who has something to lose, and under registration that would be his professional standing. At the present moment any architect guilty of unprofessional conduct, however gross, provided he keeps within the limits of the law, would only lose his standing in the eyes of his professional brethren, and could not be prevented from describing himself as an architect and a member of an honourable profession and training pupils to any number; but under registration, as generally understood, any such person found guilty of serious professional malpractice would no longer be able to describe himself as an architect or recover professional fees at law.

The registration of architects would make it possible to obtain reliable statistics regarding the profession and all matters concerning it; and, as an executive force, the local influence of the provincial societies would be most valuable, as under a wise measure of registration their standing would be enhanced by their official connection as educational bodies with the central authority; and through the whole of this and societies working in the interests of art and architecture would be supervised to some extent by a central body, possibly similar to the Central Council suggested in the Architects' Registration Bill.

The Central Council hitherto provided for in that Bill would consist of architects of the highest standing, elected to represent the various existing architectural bodies, Metropolitan and provincial, in numbers proportionate to the importance of the bodies which they represented, and inclusive of representatives of architects qualified for registration who are unattached to any professional society.

This Council would administer the code of ethics of the profession, and it is hard to imagine how such an arrangement could be prejudicial to art in architecture.

In addition to this comprehensive policy, a Bill to protect architectural copyright is proposed, a Bill which should be of great interest to this Society and its members, as well as to the profession generally; to the members of this Guild, as assistants, because it is conceivable that their ideas in many cases will automatically become the copyright of their employers; and to the profession generally, because the promoters of this policy are prepared to hand over, quite unnecessarily, the management of purely professional matters to members of the legal profession, who can hardly be judges of what constitutes originality in architectural design.

It is amusing to find that the first great proposal for many years, professedly in the interests of architects, should be so obviously in the interests of the legal profession, and such a Gilbertian position can only bring ridicule on architects and give the public cause to believe that architects cannot manage their own affairs. Under registration the names of practitioners guilty of the malpractice of unjustifiably copying plans or elevations to the detriment of their professional brethren could be removed from the registration list, and this action would be a parallel to being struck off the rolls in the legal and medical professions. Lawyers and medical men have wisely kept the management of their own affairs in their own hands, and it cannot be said that it presses unfairly on the members of these professions, as only in the case of aggravated malpractice is the power of ejection exercised.

As architects can be the only judges of what constitutes infringement of architectural design, the elevation of some eminent architect to the Bench to deal with all cases under the Architectural Copyright Act would appear to be necessary, in conjunction with an arrangement whereby architects might take silk and plead at the architectural Bar on matters of art. This may appear to be merely fantastic, but, given an Architectural Copyright Bill to protect originality in art in architecture, it appears to be a logical necessity.

An Architectural Copyright Bill in conjunction with an Architects' Registration Bill is more attractive; but architectural copyright under existing conditions does not appear to be in the best interests of architectural progress.

Registration, on the other hand, would appear to tend towards architectural progress. Mr. Reginald Blomfield,

A.R.A., in his contribution to the symposium already mentioned, says that "only a trained architect can be an architect," and as under registration in the next generation all architects would undergo some approved training and their pupils would be also trained it follows that a profession trained to some extent would be the result.

Registration could not produce genius, or even tend towards the production of genius; but it would tend towards a reduction of the production of utterly bad works of architectural art, while it would not in any way hamper the practice of gentlemen who are specially qualified to produce works of outstanding merit and originality.

The registration of architects, by binding the members of the profession together, by enforcing a statutory qualification, by emphasising the necessity for the study of architecture as an art, and, through the power it would have as a united and definite profession able to speak with one voice, could only have the effect of furthering this ideal of carrying our tradition forward and proving to future critics that this generation was solicitous for the well-being of that art which is undoubtedly the truest index to the culture or civilisation of any age.

Italy, Spain, Russia, several of the United States of America, the Transvaal, and some of the Canadian provinces have successfully adopted registration; while Germany and Hungary compel all public architectural officials to have a Government diploma; and from none of these countries do we hear that the spirit of design in architecture has died in consequence.

Registration stands for statutory qualification, which depends upon architectural education; and architectural education, in whatever light we view it, must appear the most important subject that can engage the attention of the architect, and it is most important that he should now support the policy of registration if he wishes architects to control the necessary qualifying examinations and those second-rate colleges which profess to turn out architects ready to practise after very short periods of tuition, and who simply swell the crowds of badly trained assistants. Statutory qualification, to be really satisfactory, should be managed from one fountain-head, and no body should be allowed entirely independent powers of examination or registration, and the anomalies which exist in other registered professions should be avoided. In the medical profession, particularly, it is possible to practise with qualifications which are very different in standing.

The public have a right to know if every professional man working in such a way has had a proper architectural training, and is held officially responsible for his professional probity. Registration would provide an official register of names and qualifications, which would be an effective check on the abuse of professional titles or the use of titles which have little or no bearing on the profession practised. In short, it is claimed that the statutory qualification of architects would provide an educated and responsible profession, would benefit the progress of architectural art by convincing the public of the importance of the profession and its work, would make it immediately possible to get statistics on which to base proposals for the improvement of the position of the assistant, and generally raise the profession to that standing which it ought to have in the public estimation.

The progress of art depends upon public support, and the public is always impressed by strength. Miligias said: "If massive columns are close to each other they appear more massive still; and slender columns when wide apart appear slenderer still." It is surely easy and natural for architects to apply this architectural maxim to their professional affairs. Every architect is a column in the structure of the profession, and if architects bind themselves together under registration, in the interests of their art as well as in the public interest, the tendency will be for the public to respond by showing appreciation of architectural refinement and excellence, and condemning the vulgar and inartistic.

THE King has commanded that henceforth the Society of British Sculptors shall be known as the Royal Society of British Sculptors.

THE superintendent of works to the George Heriot's Trust, Edinburgh, has been directed by the governors to prepare the working drawings for the proposed science department at George Heriot's school.

THE Duke of Norfolk, speaking at a meeting of the Sussex Territorial Association held at Brighton, urged that there should be inserted in all builders' contracts a clause giving preference to local workmen who are Territorials. It was decided to take the question into further consideration.

THE LAYING OUT OF A BUILDING ESTATE.—II.

ON Thursday evening Mr. E. J. Naldrett, barrister-at-law, delivered the second of the course of lectures, arranged by the Legal Education Committee of the Law Society, on Local Government Law in connection with the Laying-out of a Building Estate. Mr. W. Trower presided.

Mr. Naldrett said that in his first lecture he referred to the meaning of the terms "street" and "new street," which, both in the Public Health Act of 1875 and the Metropolitan Act, had a very wide meaning indeed, and included any highway, bridge (not being a county bridge), road, lane, square, court, alley and passage, whether a thoroughfare or not. The next question which arose was as to how a street became a highway—i.e., a way over which the public had the right of passage. He was speaking of a highway quite irrespective of any liability for repair, because the two things were quite distinct. If an owner had formed a road or way over his land for use by the public, and the public so used it, the owner thereby dedicated it as a public highway. Such dedication did not necessarily involve any formal act on the part of the owner, and in most cases such dedication was presumed from the fact of the public using it. An important case governing this point was that of the "Greenwich Board of Works v. Maudslay" (1870), whilst "Fisher v. Prowse" (1862) was another case dealing with the question. The owner might give a right-of-way across land without giving away the ownership of the soil; but it might be laid down as a general rule that once a highway always a highway. Then came the question of liability to repair such highways. Up to the coming into force of the Highways Act of 1835 all highways were repairable by the inhabitants of a parish at large; but since that Act highways made across a building estate had ceased to become repairable by the inhabitants at large. The elaborate machinery provided by the Act of 1835 might be used for the purpose of making them so repairable; but these powers were seldom resorted to. Then the owner was not liable to repair a highway simply because he made it across his land, and the result was that since 1835 many highways had come into existence which neither the local authority nor the owners creating them were liable to repair. He strongly recommended them to read the judgment of Mr. Justice Wills in "Eyre v. New Forest Highway Board" (1892) on this point, for it was most helpful with regard to the law of highways. In urban districts highways which were repairable by the inhabitants at large were vested in the Urban District Councils; whilst under Section 25 of the Local Government Act, 1894, Rural District Councils were liable to repair highways repairable by the inhabitants at large within their districts. Main roads vested in the County Councils were, of course, excepted. They had now to consider what the powers of the local authority were in relation to highways not repairable by the inhabitants at large, in which class were included newly made highways across a building estate which had been laid out in accordance with the requirements of the by-laws. The important section dealing with this was Section 150 of the Public Health Act, 1875, which provided that if such highway was not sewered, levelled, paved, metalled, flagged, channelled, and lighted to the satisfaction of the urban authority, the authority might give notice to the owners and occupiers of premises abutting on the street, requiring them to execute such works within the time specified by the notice. Before giving notice the local authority had to cause plans and estimates of the cost of the work to be prepared, which were to be open to the inspection of the owners. If the owners themselves did not do the work, then the authority could execute it and recover the cost in such proportions as might be settled by the surveyor to the authority, or, in the case of dispute, by arbitration, or the Urban Authority might declare the expense to be private improvement expenses, and recover them as private improvement rates. Section 150 of the Public Health Act concluded with the provision that the same proceedings might be taken and the same powers exercised in respect of any street or road, although a part might be a public footpath or repairable by the inhabitants at large, as fully as if the whole of the said street or road was a highway not repairable by the inhabitants at large. This section, although referring in terms to an urban district, might by an order of the Local Government Board be applied to a rural district. The word "street" in this Section 150 was used in a wide sense, for it had been held that the definition of street in Section 4 of the Act must be read into it, which he had already referred to. An interesting case was that of "Richards v. Kessick" (1888). Mr. Richards was the joint owner of a strip of land 3 feet wide alongside an existing highway. The strip of land was dedicated as a footpath, and Mr.

Richards built houses behind the footpath and facing it. The local authority gave him notice to make the strip up and it was held by the Courts that this strip was a street within the operation of the last paragraph of Section 150 of the Public Health Act. The local authority, however, must make up the street as they found it, and had no power under the section to alter the respective proportions of the footway. A case bearing on this was "Robertson v. Bristol Corporation" (1900). If a street had once been sewered to the satisfaction of the local authority, the sewer would vest in the authority, and they could not require the owners to aggrander the street. It did not, of course, follow that every sewer laid in a street was laid to the satisfaction of the local authority, but where a sewer had existed for a time, and the local authority had known of its existence and had expressed no dissatisfaction with it, it would be inferred that it was sewer laid to their satisfaction. This was governed by the cases of "Bonella v. Twickenham Local Board" (1887) and "Wilmslow U.D.C. v. Sidebottom" (1906). The reason for this finding was that sewers as soon as they came into existence vested in the local authority, and under the Public Health Act there were certain statutory duties put on the local authority to maintain sewers. The position with regard to paving, levelling, channelling, and so on was different, because the local authority might require the frontagers to do such work as occasion required until the street was declared to be a highway repairable by the inhabitants at large. Liability on the owner only attached if his premises adjoined or abutted on the street in question and in the case of "Williams v. Wandsworth Board of Works" it was held that the owner of a strip of land only 4 inches wide adjoining the highway was liable for the work and that no liability attached to the owner of the land behind the 4-inch strip. An owner might dispute the apportionment of the expense of making up a street, and, until the dispute was settled by arbitration, no proceedings could be taken against him to recover the cost. The jurisdiction of the arbitrator was, however, so limited that it was rarely found advantageous to resort to this procedure. The last paragraph of Section 150, which he had referred to, called for further comment, because if there was a public footpath repairable by the inhabitants at large running across a building estate, and an owner formed a new street along the line of the footpath, then the whole of the street, and not merely the added portion, might be dealt with by the local authority. In other words, the local authority might require it to be made up at the expense of the frontagers. This was laid down in the case of "Evans v. Newport Sanitary Authority" (1889). It had never been determined to what extent an old highway might be added to in order to bring the whole street within the operation of the clause, for in the Newport case it was simply a footpath absorbed by the new street, and it was held that the local authority was right in making up the whole street and charging the whole cost to the frontagers. A recent case of interest was that of "Portsmouth Corporation v. Hall." The owners of the estate there had an ancient highway about 30 feet wide repairable by the inhabitants at large, and they agreed with the Borough Council that when the estate was laid out they would straighten and widen the road to 40 feet, and the agreement recited that it was entered into for the purpose of settling the question which had arisen as to the extent of the public rights over the road. When the whole of the road had been laid out in accordance with the agreement the Council made it up under the provisions of Section 150 of the Act of 1875, and they sued the owners of the premises abutting on the road to recover the cost. Liability was denied, and the Court held that the conditions to the road being made were part of a bargain with the Council, and the road must be treated as being repairable by the inhabitants at large. It was held that the result of the bargain was that the added strip was put into the same position as the existing highway, and was therefore repairable by the inhabitants at large. The alternative procedure to Section 150 of the Public Health Act was the Private Streets Works Act, 1892. The Act followed to some extent the wording of the Public Health Act, but the local authority, in settling the provisional apportionment might have regard to the greater or less degree of benefit to be derived by premises from the work to be undertaken and the value of the work already done, and might include premises having access to a street although not abutting upon it. The Act also enabled questions to be raised before the works were carried out, and thus differed from Clause 150 of the other Act. By adopting this Act local authorities surrendered some of their powers, because their decisions in connection with a street were subject to review by the Justices if the

owners raised any of the objections set out in the Act. It was of the utmost importance, however, for owners to give notice of objection within the prescribed period, for otherwise they were bound to pay the charges imposed on them. Under Section 19 of the Public Health Amendment Act, 1907, the local authority might require owners of land and premises abutting on a street to execute repairs in order to obviate danger to passengers or vehicles; but the owners might then requisition the local authority to deal with the street under the Public Health or the Private Streets Works Act. Dealing next with the laying out of streets in the Metropolis, the lecturer pointed out that all highways vested in the City or Borough Councils, and under Section 112 of the Metropolis Management Act a "new street" had a particular meaning. The cases of "*St. Giles, Camberwell, v. Crystal Palace*" (1892), "*Pound v. Plumstead Board of Works*" (1871), "*Property Exchange, Ltd. v. Wandsworth Board of Works*" (1902), and "*Reg. v. Hackney Board of Works*" (1873), were all leading cases with regard to the Metropolis. Mr. Naldrett proceeded next to describe the technical procedure which must be followed in order to stop up or divert a highway, and went on to deal with the Public Health (Building in Streets) Act, 1888. This Act, which dealt with the building line of streets, had become a fruitful source of litigation, but a number of facts had been established. For instance, a local authority was not entitled to make a charge for giving consent to an application, while a house which abutted on two streets might be in both streets for the purposes of the Act. In the case of the "*Attorney-General v. Edwards*" (1891), Mr. Justice Romer laid it down that, in considering which was the front main wall of a building in a street where a building was in course of erection, all the circumstances of the case must be taken into consideration, and the building must be looked upon as a whole—its character, position, and distance from the building being erected or brought forward in alleged contravention of the section. A particular wing or other projection must not be treated as the front main wall, which was to give the governing line for another building.

Answering questions put by different members of the audience, Mr. Naldrett said that in the case of a diversion of a right-of-way, it must be done by an arrangement between the owner and the local authority, and of course the local authority would not move unless the owner agreed to terms. By law an old highway could not be diverted until a new highway was made. If a sewer was laid in a road and was acquiesced in by the local authority, it would not be competent for them at a later date to require the owner to put in a separate surface-water sewer in addition to the soil sewer.

On Tuesday Mr. E. J. Naldrett, barrister-at-law, gave his third lecture at the Law Society on Local Government law in regard to the laying out of and development of a building estate.

Mr. Naldrett, touching first on the matter of buildings, pointed out that both within and without the Metropolis the local authorities were armed with very large powers for dealing with new buildings, and either by statute or by by-law they could exercise control over almost every detail which could be imagined in connection with buildings. By Section 157 of the Public Health Act of 1875 authorities outside the Metropolis could make by-laws with respect to the structure, walls, foundations, and chimneys of new buildings for securing stability, for the prevention of fires, and for purposes of health; also with regard to the sufficiency of air-space about buildings, ventilation, drainage, the closing of buildings unfit for habitation, and so on. There were also powers to require the depositing of plans, &c., by persons intending to erect buildings and to enable the local authority to remove buildings erected in contravention of the by-laws, and so on. There was a saving provision for houses erected before the passing of the Act, and in respect of railway buildings. By Section 23 of the Public Health Acts Amendment Act (1890), which was an adoptive Act, as he had previously explained, other matters were brought within the scope of the authorities for the making of by-laws. These related to various matters for preventing buildings erected in accordance with the by-laws being altered, the flushing of water-closets, the area of rooms for human habitation, the paving of yards, &c. The by-laws made under this Act affected buildings already erected. The Amendment Act of 1907 still further extended the powers of the local authorities in the making of by-laws. Local authorities had very freely exercised their powers to make by-laws with regard to buildings, and in every district they found a code enforced based very largely on the model clauses issued by the Local Government Board. It did not follow, however, that the by-laws of

different districts were the same, or that they always followed the model clauses, so that every owner would require to get a copy of the by-laws of the district in which he intended to carry on building operations. A rural district council might be invested with powers to make by-laws by order of the Local Government Board. This raised the question of what constituted a new building within the meaning of these by-laws. Clearly, a building erected for the first time fell within the meaning, but the term had a much wider application. There was no exhaustive definition of the term, but there was statutory authority for saying that the re-erection of any building pulled down to or below the ground floor, or of any frame building of which only the framework of the lowest storey was left, or the conversion into a dwelling house of a building not originally constructed for human habitation; or the conversion into more than one dwelling house of a building originally constructed for one dwelling house were all to be considered as coming within the meaning of the term new building. The Act of 1907 further extended the meaning of the term, and therefore he need not quote cases, but by the cases brought by the Southend Corporation against *Archer and Romaine* in 1901 it was decided that temporary structures were not new buildings. In consequence the local authorities experienced considerable difficulty until the Amending Act of 1907, but now there was a provision which made it incumbent on the owner to apply to the local authority for permission to erect such buildings, and to deposit plans and particulars, and approval might be given with conditions attached as to sanitation and fire protection. In an urban district a new building could not be erected over a sewer without the permission of the local authority, notwithstanding the fact that it might be on private land, and further, in the case of a building erected at the corner of two streets the owner might be required to round off the building, subject to being paid compensation for any loss sustained. Coming next to the question of drainage, Mr. Naldrett emphasised the importance of distinguishing between a drain and a sewer so as to enable proper consideration to be given to the rights and duties of the owner on one hand and of the local authority on the other. According to Section 4 of the Public Health Act (1875), which applied to districts outside the Metropolis, a drain meant any drain used for the drainage of one building only or premises within the same curtilage, and made merely for the purpose of receiving the sewage of the building. A sewer included sewers and drains of every description, except drains to which the term drain as thus referred to applied. In Section 19 of the amending Act, however, there was a provision which enabled in certain cases that which was a sewer according to the definition in the 1875 Act to be treated as a drain. In the Metropolis Management Act the meaning given to the terms drain and sewer was very similar to that given in the Public Health Act of 1875, but the term "combined drain" was introduced. The Act said: "The word drain shall mean and include any drain if and used for the drainage of one building only, or premises within the same curtilage and made merely for the purpose of communicating with a cesspool or other like receptacle for drainage or with a sewer connecting the drains of two or more places or premises occupied by different persons and shall also include any drain for draining any group or block of houses under a combined operation." It was also provided that the word sewer should include sewers and drains of every description except drains to which the term drain as aforesaid applied. In substance the definition of a drain and a sewer outside the Metropolis and inside the Metropolis was alike, but outside the Metropolis they had to consider what was meant by a "single private drain," which was referred to in the Act of 1890, whilst inside the Metropolis they had to deal with what was known as drainage by a combined operation. The conflicting decisions of the Courts raged round these two points, but, speaking quite generally, it might be said that the effect of the definition was that that which received the drainage from one house or premises in the same curtilage was a drain, and that that which received the drainage of two or more houses was a sewer. The question of what was considered to be premises within the same curtilage was considered in connection with the Lowther Arcade, where the different premises were drained by a drain running down the middle of the Arcade to the main sewer in the street outside, and in this case it was held to be a sewer and not a drain. Until 1894 a pipe on private land, although receiving the drainage of more than one building was generally regarded as a private drain and not as a sewer vested in the local authority, but in that year the matter came before the courts in the case of *Trevis v. Uttley*. Mr. Uttley built three cottages, and provided

a pipe for the drainage of the three, which ran under one house, to the public sewer. The question arose as to who was liable to repair the pipe, and it was held that it was a public sewer and repairable by the local authority. The definition he had mentioned was applied to the case because the pipe received the drainage of more than one house. Mr. Justice Wright, in giving judgment, said it was an absurdity that that which was really a private drain should so vest in the local authority, but that the language of the section was plain. This decision still stood, and has been followed in many cases since. Two semi-detached buildings might be considered one building in some cases, and it was held so in *Hedley v. Webb* (1901). In *Humphrey v. Young* (1903) the justices found that two semi-detached buildings were separate buildings, and that therefore the pipe was a sewer and not a drain, and the decision was upheld. The owner of a building estate must deposit a plan showing the course of an intended new sewer along a new road. In the case of *Turner v. the Handsworth Urban District Council* (1909) it was proved that a sewer was laid under these circumstances and passed by the local authority, but no houses were built facing the sewer. It was held that the line of pipes, immediately after it had been approved and covered in, was a sewer which vested in the local authority, and that the authority had power to connect it with other sewers. The definition of "sewer" did not include a cesspool, as was decided in *Meador v. West Cowes Local Board* (1892), but in the case of *Swanston v. Twickenham Local Board* (1879) a manhole covering the entrance to a sewer was held to be part of it. A pipe which was a sewer and received the sewage of two houses did not cease to be a sewer if one house was disconnected. This was decided in the case of *St. Leonard, Shoreditch v. Phelan* (1896). In the case of *Vowles v. Colmer* (1895) land was shown to have been laid out as a building estate, and the owners constructed a sewer in the roadway on one side. Building plots were disposed of from time to time, and the purchasers were required to make a payment for connecting the premises they erected with the sewer. The owner of a house on the other side of the roadway opposite the building estate claimed the right to connect his drains to the sewer without payment to the owners of the estate, and an action to prevent him doing so failed. It was the duty of local authorities to keep in repair all sewers belonging to them, and to cause such sewers to be made as were necessary for the effectually doing their duty. In the case of *Regina v. Tynemouth Rural District Council* (1896) the facts were that Lord Hastings proposed to lay out a building estate, and he deposited plans which showed that each of the houses was to be drained with a separate drain ending in the middle of one of the proposed new streets. The local authority refused to approve of the plans unless the owner undertook to construct the sewers to which the drains should communicate and also the necessary main outfall sewer. The Court held that the local authority were not entitled to attach such a condition, and that it was their duty to deal with the sewage in their district. Local authorities could not be compelled to make sewers in regard to future requirements, or to assist a landowner in the development of his estate, and thus where a building estate was laid out the owner would have to provide a cesspool if there was no outfall. Where, however, houses were built to such an extent as to necessitate a scheme of drainage the duty would rest upon the local authority to make the necessary sewers. Local authorities could require a new street to be sewered under the Private Streets Act of 1892, as he had explained in his previous lecture. It was now a well established rule that if the local authority once allowed a drain to be connected with their sewer they could not deprive the occupier of that right, and this was laid down in the case of *East Barnet Valley Urban District Council v. Stallard*.

Mr. Naldrett concluded by explaining the decisions in the cases of *Bradford v. Eastbourne Corporation* (1896), *Jackson v. Wimbledon Urban District Council* (1905), and *Wood Green Urban District Council v. Joseph* (1907), all of which touched on the complicated subject of drain and sewer. In the last case there was a row of houses belonging to three different owners, and each pair of houses was drained into a line of pipes laid on private land, and this line of pipes conveyed the sewage to the public sewer. The Courts held that the line of pipes was a single private drain, and the decision simplified matters somewhat, because it laid it down that they could not have a sewer discharging into a single private drain and then the private drain discharging into a sewer.

TRADE NOTE.

AN erroneous impression having arisen from the fact that Messrs. Diespeker, Ltd., Holborn Viaduct, London, have gone into voluntary liquidation, the company state the creditors are being paid in full, and the company are now conducting their business under practically the same auspices. The following is a list of a few of the principal works the company have recently carried out, and in progress:—King Edward VII. Post Office, 'Sir Henry Tanner, I.S.O.; The Palladium, Messrs. Frank Matcham & Co.; Alhambra, Paris, Mr. Bertie Crewe; General Assurance Buildings, Aldwych, the Alhambra, Glasgow, and the Western Infirmary, Glasgow, all by Dr. J. J. Burnet; Napsbury Asylum extensions, and Royal National Orthopaedic Hospital, Mr. Rowland Plumble; Berkshire County Council Offices, Reading, Messrs. Warwick & Hall; Kingsway House, Aldwych, Messrs. Gordon & Gunton; Wandsworth Infirmary, Mr. J. S. Gibson; Town Hall, Hull, Mr. E. R. Cooper; Elton Schools, Bury, Mr. F. S. Biram; Vickers Buildings, Great Chapel Street, for the Westminster Trust, Ltd.; Aberdeen Infirmary, Messrs. Kelly & Nicol.

PLANS are being prepared for the erection of a masonic hall near the Municipal Buildings, Johnstone, N.B.

MESSRS. WARE & BAILEY, architects, have prepared plans for a commodious Masonic Hall to be erected with a frontage on Oliver Street, Birkenhead.

THE Bolton Urban District Council have received the consent of the Local Government Board to borrowing 9,475*l.* for the purpose of erecting as an experiment forty-eight houses.

At the last meeting of the executive committee in connection with the King's statue for Aberdeen, specifications were submitted by the sculptor, Mr. Drury, A.R.A., showing that the total cost of the work would be 3,500*l.*

THE building trade at Worthing is enjoying considerable activity. At the last meeting of the Town Council plans were passed for the erection of twenty-eight houses. The plans for eighteen of these were submitted by Mr. J. E. Lund, architect, and six by Messrs. Hyde & Son, M.S.A., architects.

THE Doncaster Corporation have summoned a town planning conference for Monday next, of local authorities and others interested in the expected development of the district. It is calculated that 120,000 people will be brought to the neighbourhood through the increase of colliery work.

It was reported to the monthly meeting of Dunfermline Parish School Board that Lord Elgin had approved of the plans for a new school at Limekilns, to meet the development of the works at Rosyth. The feu adjoins Broomhall policies.

THE Inverkeithing property committee have applied for warrant to lay out new streets in the vicinity of Church Street. It is proposed to erect eight tenements of four storeys each, and six shops at a cost of 15,000*l.* The accommodation is needed by the workers at Rosyth Dockyard.

THE estimate of Messrs. P. & W. Anderson, Ltd., 64 Douglas Street, Glasgow, has been accepted for the erection of the new Hutchesons' Girls' School on the vacant ground at Calder Street and Kingarth Street, Govanhill. The cost will be between 25,000*l.* and 30,000*l.* The erection of the barricades and the excavation of the foundations began this week, and the building is to be ready for the reassembling of the school after the holidays next autumn.

AMONG the plans submitted to Dunfermline Dean of Guild Court last week was one by the Federal Property and Estates Trust, Ltd., Glasgow, for seven tenements of workmen's houses proposed to be erected in the Brucefield district. A plan was also submitted for a similar number of tenements in the same district by Messrs. John M'Lean & Co., Glasgow. Warrant was granted in the latter case, conditional on the building line being kept back 30 feet from the centre of the roadway.

MOUBRAY HOUSE, a historic dwelling situated near John Knox's house in the High Street, Edinburgh, has been secured for the benefit of the public for the sum of 1,150*l.* There is no definite record as to the exact date when the house was built. The title-deeds did not take them further back than 1703. Some of the ceilings were probably between 1650 and 1670.

THE Belgian Consul at San Francisco reports that, owing to the rapid development of the town of San Diego, there is great activity in the building trade there, and consequently a large demand for reinforced concrete. About 750,000*l.* was spent on building operations during 1910. Work will be begun shortly on three more large buildings, viz., a railway station, a theatre, and an hotel, the total cost of which is estimated at nearly 300,000*l.*

THE
Architect and Contract Reporter.

FRIDAY, JANUARY 20, 1911.

Published weekly, subscription 19s. per annum for Great Britain, and for Colonial and Foreign subscriptions £1 6s. 6d. All business communications to the Managing Director,

P. A. GILBERT WOOD,

Publishing Offices, 6-11 Imperial Buildings, Ludgate Circus, London, England.

Telephone No. 4725 Holborn.

Branch Offices at 43 OLD QUEEN STREET, S.W., Messrs. W. HAY FIELDING & CO. being the representatives for all business purposes.

The Birmingham Offices are at 102 COLMORE ROW.

. Entered in the United States of America as second-class matter.

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The International News Co., 5 Bream's Buildings, Chancery Lane, London, England, and New York.

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Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

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EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit the insertion of lengthy communications.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

. As great disappointment is frequently expressed at the nonappearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

ARGENTINE.—April 20.—A competition of plans for a hospital and school of medicine, to be erected at Rosario in celebration of the Argentine Centenary at a cost of about 149,000l. Prizes of 1,050l., 700l. and 440l. will be awarded. A copy of the conditions, &c., may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, London, E.C., where also a limited number of copies are available for distribution. Plans must be sent to the "Secretaria de la Comisión Pro-Hospital é Instituto de Enseñanza Médica del Centenario, Calle Córdoba 1230," Rosario.

ATHENS.—Aug. 21.—An international competition of plans is invited by the Greek Ministry of the Interior (Public Works) for the erection of a Court of Justice at Athens. The cost of the building must not exceed 160,000l. A first prize of 800l., and a second prize of 320l. will be awarded. The Greek Official Gazette, containing particulars (in Greek and in French) may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

BRADFORD.—May 1.—The Board of Management of the Bradford Infirmary invite plans with estimates for a new infirmary in Duckworth Lane. Mr. Keith D. Young, F.R.I.B.A., will act as assessor. Deposit 3l. 3s., which will be refunded on receipt of a bona-fide design or if block plan, instructions, &c., are returned within a month after receipt of replies to competitors' questions. The Secretary Superintendent of the Royal Infirmary, Bradford. (For further particulars see advertisement.)

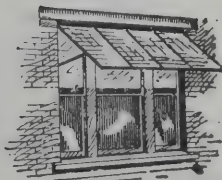
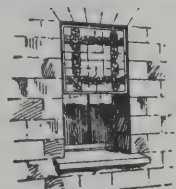
COVENTRY.—April 1.—The Corporation contemplate the erection of municipal offices in the centre of the city, and also possibly a town hall, and accordingly invite competitive designs. Mr. E. Guy Dawber, F.R.I.B.A., will act as assessor. Deposit 2l. 2s., which will be refunded on receipt

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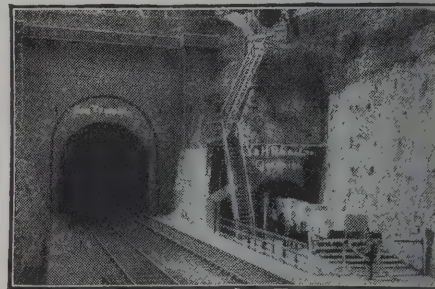
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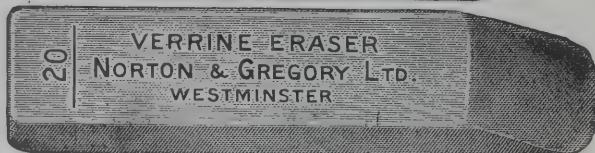
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of a bona-fide design or if the particulars are returned within fourteen days of receipt. Mr. Geo. Sutton, town clerk, 10 Hay Lane, Coventry. (For further particulars see advertisement, November 18.)

CUBA.—April 15.—An international competition has been arranged for a Presidential Palace to be erected at Havana at a cost of about 205,000l. Premiums of 10,000 pesos and 5,000 pesos will be awarded. Conditions may be seen at the Cuban Legation, 3 Grosvenor Mansions, Victoria Street, S.W., or the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

GLASGOW.—Jan. 31.—The Corporation invite plans of a proposed branch library at the corner of Saracen Street and Allander Street, Possilpark. Premiums of 50l., 30l. and 25l., will be awarded. A plan of the site and conditions may be obtained free from Mr. A. W. Myles, town clerk, City Chambers, Glasgow.

HULL.—Feb. 1.—The Guardians of Sculcoates Union invite competitive designs for a suite of offices in Margaret Street, Hull. Premiums of 10l. 10s., 6l. 6s., and 4l. 4s. will be awarded. Mr. J. H. Wild, clerk to the Guardians, 12 Harley Street, Hull.

LEICESTER.—The Corporation invite architects practising in Leicester to supply plans, designs, and estimates for a public hall to be erected adjoining the Victoria Park and Regent Road. Premiums of 100l., 50l., and 25l. will be awarded. Deposit 1l. 1s. Mr. E. G. Mawbey, M.Inst.C.E., Town Hall, Leicester.

LLANDRINDOD WELLS.—The Urban District Council invite competitive plans for a pavilion in the recreation ground. First and second premiums will be awarded by an assessor. Mr. D. C. Davies, clerk, Llandrindod Wells.

MANCHESTER.—March 31.—The Corporation invite designs for a Library and Art Gallery upon the Piccadilly site in the centre of the city. The Preliminary Competition closes March 31. The authors of ten selected designs will compete in the Final Competition. Mr. Reginald Blomfield, A.R.A., will act as assessor, in connection with the city architect. Apply for particulars to Mr. Thomas Hudson, Town Clerk, Town Hall, Manchester. (For further particulars see advertisement, January 6.)

PENISTONE.—Competitive plans and specifications are invited for a "Carnegie" Free Library. The Clerk to the District Council, Penistone.

ROMFORD.—The Town Planning and Modern House and Cottage Exhibition at Gidea Park, Squirrels Heath, in the Romford Garden Suburb, summer 1911. Class IV.—Town plan of Gidea Park—prizes of 100l. and 50l. Class VII.—Open to builders. For excellence of workmanship and construction in the erection of a cottage in Class I. or II.—first prize, gold medal and 100l.; second prize, 50l. Final dates for designs; Class IV., March 31, 1911. Mr. Michael Bunney, A.R.I.B.A., hon secretary, 33 Henrietta Street, Strand, W.C.

SALE.—Jan. 21.—The Sale and Ashton-upon-Mersey District Administrative Sub-committee for Education invite architects practising within a radius of twenty miles of Manchester to make application by Jan. 21 for a limited competition for a proposed higher elementary school at Sale to accommodate about 250 children. Mr. W. Taylor, clerk, Public Free Library and Technical School, Sale, Cheshire.

SOUTHAMPTON.—The Council of Hartley University College invite designs for the proposed new buildings. Mr. H. T. Hare, F.R.I.B.A., will act as assessor. The deposit of 1l. 1s. with the application will be returned if the conditions are returned within fourteen days. Mr. D. Kiddle, registrar, Hartley University College, Southampton.

CONTRACTS OPEN.

ADWICK-LE-STREET.—For factory buildings at Adwick-le-Street, Doncaster. Send names to Mr. W. H. Wagstaff, C.E., architect and surveyor, 4 Priory Place, Doncaster.

ALDERSHOT.—Jan. 31.—For erection of a secondary school, for the Aldershot Urban District Council. Messrs. Kingham & Kingham, architects, Bank House, Grosvenor Road, Aldershot. Send 2l. 2s. deposit by Jan. 31, to Mr. W. E. Foster, clerk, Municipal Buildings, Aldershot.

BARNOLDSWICK.—Jan. 26.—For the various trades required in erection and completion of seven dwelling houses at Barnoldswick for the Barnoldswick Co-operative Industrial Society, Ltd., 5 Manchester Road, Barnoldswick, via Colne.

BINGLEY.—For the several works required in erection of a detached residence. Send names to Messrs. Nunns & Bracewell, architects, Bank Chambers, Bingley, Yorks.

BIRMINGHAM.—Jan. 31.—The Commissioners of H.M. Works and Public Buildings invite tenders, by schedule of prices, for the reinforced concrete work at the telegraph stores building (block C), Bordesley. Deposit 1l. 1s. The Controller, Telegraph Stores, Fordrough Lane, Birmingham, or Mr. E. Cropper, architect, 22 Carlisle Place, Westminster, London, S.W.

BLACKBURN.—Jan. 26.—For alterations and additions to the County Court. The Registrar, County Court, Blackburn.

BOLTON-UPON-DEARNE.—Feb. 13.—For erection of forty-eight dwelling houses at Highgate, for the Bolton-upon-Deane Urban District Council. Deposit 2l. 2s. Mr. J. W. Wilson, surveyor, Council Offices, Station Road, Bolton-upon-Deane, Yorks.

BRAMLEY.—Jan. 25.—For bricklayer and mason, carpenter and joiner, plumber and glazier, slater, smith, and founder, also painter's work in connection with the laundry extension at the workhouse, for the Guardians of Bramley Union. Mr. J. A. Webster, architect, 24 Basinghall Street, Leeds.

BRISTOL.—Jan. 23.—For erection of boundary walls near the casual wards at the Eastville Workhouse. Mr. J. J. Simpson, clerk to the Guardians, St. Peter's Hospital, Bristol.

BRUMBY.—Feb. 6.—For erection of a pair of cottages at Brumby, Yorks. Deposit 2l. 2s. Mr. John Potts, 54 Fox Street, Scunthorpe, or Messrs. Hastie, 65 Lincoln's Inn Fields, London, W.C.

BUXTON.—For erection of a bungalow, Staden Lane. Mr. G. E. Garlick, architect, Quadrant Chambers, Buxton.

CAMBRIDGE.—Feb. 4.—For erection of two public conveniences, one on Butt's Green, Midsummer Common, and the other on Petersfield. The Borough Surveyor, Guildhall, Cambridge.

CARLETON.—Jan. 25.—For erection and completion of a cottage home at Carleton, near Pontefract. Deposit 10s. Messrs. Garside & Pennington, architects, of Pontefract and Castleford.

CATERHAM VALLEY.—Jan. 23.—For erection of Council offices and hall. Deposit 1l. 1s. Mr. H. R. Martin, surveyor, Council Offices, Caterham Valley, Surrey.

CHARLTON KINGS.—Jan. 28.—For erecting cloakrooms at Charlton Kings Council school. Deposit 2l. 2s. Mr. R. S. Phillips, architect, Midland Bank Chambers, Gloucester.

CHELTENHAM.—Jan. 23.—For erection of two workmen's cottages at Haydon Sewage Farm. Mr. J. S. Pickering, borough engineer, Municipal Offices, Cheltenham.

CUDWORTH.—Feb. 9.—The West Riding education committee invite whole or separate tenders for the following works at Snydale Road Council school, Cudworth, viz.:—Drainage and conversion of offices (builder and plumber). The Education Architect, County Hall, Wakefield. Send 1l. deposit to the West Riding Treasurer, County Hall, Wakefield.

DARESBURY.—Jan. 25.—For alterations and additions to the Council school. Deposit 1l. Mr. H. Beswick, F.R.I.B.A., county architect, Newgate Street, Chester.

DARTFORD.—Jan. 30.—For painting and repairs to be done at the staff quarters at the Infectious Diseases Hospital, Bow Arrow Lane. Send names and 2l. 2s. deposit by Jan. 20 to Mr. Robert Marchant, A.R.I.B.A., 28 Theobald's Road, London, W.C.

DORCHESTER.—Jan. 25.—For erection of police cells in Glydepath Road. The County Surveyor's Department, Dorchester.

DRONFIELD.—Jan. 28.—For widening School Lane, setting back wall and demolishing four houses. Deposit 2l. 2s. Mr. T. H. Atkinson, surveyor, Council Offices, Dronfield.

EASINGTON.—For erection and completion of business premises at Easington Colliery, Durham. Mr. James Garry, F.R.I.B.A., 47 Church Street, West Hartlepool.

EAST ARDSLEY.—Jan. 31.—For erection of sliding partition in East Ardsley school, Yorks. Mr. A. Angus, W.R. Education Office, Wakefield.

EDGWARE.—Jan. 25.—For erection of an iron building to be used as an infants' playroom, at their schools, near Edgware, Middlesex, for the Guardians of Hendon Union. Deposit 2l. 2s. Mr. F. J. Seabrook, clerk, Union Offices, Edgware.

ELLAND.—Jan. 27.—For the various works required in connection with the alterations to store at Elland, Yorks., for the Halifax Industrial Society, Ltd. Messrs. Clement Williams & Sons, architects, Post Office Buildings, Commercial Street, Halifax.

ELTHAM.—Jan. 31.—For erecting a gymnasium and art room on the Avery Hill College site, for the London County Council. Deposit 3*l*. The Architect's Department, 19 Charing Cross Road, W.C. (Room 54).

ENGLISHCOMBE.—Jan. 23.—For erection of two cloak-rooms and the execution of certain alterations and repairs at the Council schools, Englishcombe, near Bath. Mr. W. F. Bird, M.S.A., Midsomer Norton, Somerset.

FARNHAM.—Feb. 6.—For alterations and additions to existing drill hall premises, Bear Lane, for the Surrey Territorial Force Association. Messrs. Jarvis & Richards, architects to the Association, 10 Queen Anne's Gate, Westminster, S.W. Send names and 1*l*. 1*s*. deposit by Jan. 23 to Messrs. Robinson & Roods, quantity surveyors, 8 New Court, Carey Street, Lincoln's Inn, W.C.

FEATHERSTONE.—Jan. 25.—For the provision of folding screens, extending urinal, and building new heating chambers in the Featherstone Council schools, Yorks. Mr. C. Harris, clerk, Education Offices, Knottingley, for whole or part work.

FYFIELD.—Feb. 20.—For the extension and alterations of the industrial and truants' school, Fyfield, near Ongar, Essex, for the West Ham education committee. Send names and 5*l*. deposit by Jan. 28, to Mr. William Jacques, A.R.I.B.A., architect to the education committee, 2 Fen Court, Fenchurch Street, E.C.

HARWICH.—Jan. 30.—For alterations and additions to several elementary schools in the borough. Mr. G. D. Hugh-Jones, secretary, Church Street, Harwich.

HASLINGDEN.—Jan. 24.—For proposed extension (comprising about 10,000 feet additional floor area) at Sykeside Mill. Apply by letter, before Jan. 24, to Mr. Henry Ross, A.R.I.B.A., 15 Cannon Street, Accrington.

HELLIFIELD.—Jan. 23.—For works required in erection of nine dwelling houses at Hellifield, near Settle (mason and bricklayers' labour only). Mr. Wm. Sunderland, Inglewood, Settle.

HEYWOOD.—Jan. 27.—For erection of the proposed Heap Bridge Council school, for the Heywood Town Council. Send names and 3*l*. 3*s*. deposit by Jan. 14 to Mr. H. Cooper Anderson, A.R.I.B.A., M.S.A., architect and surveyor, 3 Longford Street, Heywood.

HUDDERSFIELD.—Jan. 25.—For erection of a detached residence in Longley Road. Mr. Joseph Berry, architect and surveyor, 3 Market Place, Huddersfield.

ILKETSHALL ST. LAWRENCE (SUFFOLK).—Feb. 6.—For the enlargement of the Ilketshall St. Lawrence C. school (near Halesworth), by fifty places, for the East Suffolk county education committee. Send names and 1*l*. deposit by Jan. 21 to Mr. J. Webb, building surveyor, County Hall, Ipswich.

IRELAND.—Jan. 24.—For rebuilding shop, warerooms, &c., recently destroyed by fire at Edgeworthstown. Mr. P. Menton, architect, Newtown, Moate.

IRELAND.—Feb. 6.—For erection of a store at their Longford Station, for the Midland Great Western Railway of Ireland Co. Charge 5*s*. The Chief Engineer, Broadstone Station, Dublin.

KNOTTINGLEY.—Jan. 28.—For alterations and additions to Church schools, Knottingley, Yorks. Forward names by Jan. 15 to Messrs. Tennant & Collins, architects and surveyors, Pontefract.

KIDSGROVE.—For the supply and erection of a lean-to building. Messrs. Henry Pooley & Son, Ltd., Kidsgrove, Staffs.

LEEDS.—For the various works required in erection of a picture pavilion, Dewsbury Road. Apply to Mr. G. F. Bowman, architect, 5 Greek Street, Leeds.

LIVERPOOL.—Jan. 31.—For the enlargement of Liverpool (Wavertree) Sorting Office. Deposit 1*l*. 1*s*. Mr. W. Gilruth, H.M. Office of Works, Head Post Office, Liverpool, or H.M. Office of Works, Storey's Gate, London, S.W.

LONDON.—Jan. 24.—For the supply and erection of two external iron fire escape staircases and the formation of new exit doors at the Children's Infirmary, Crown Hill, Upper Norwood, S.E., for the Lambeth Board of Guardians. Deposit 2*l*. Mr. James L. Goldspink, Guardians' Board Room and Offices, Brook Street, Kennington Road, S.E.

LONDON.—Jan. 24.—For erection of sanitary conveniences, Victoria Dock Road, adjoining Custom House Station, for the West Ham Town Council. Deposit 1*l*. Mr. John G. Morley, borough engineer, Town Hall, West Ham.

LYDBROOK.—Jan. 28.—For the carrying out of alterations and additions to Joys Green Council school, near Lydbrook. Deposit 2*l*. 2*s*. Mr. R. S. Phillips, architect, Midland Bank Chambers, Gloucester.

MAIDENHEAD.—Jan. 30.—For the erection of administrative and laundry buildings at the Isolation Hospital. Deposit 1*l*. 1*s*. Mr. Percy Johns, borough surveyor, Guildhall, Maidenhead.

MANCHESTER.—Feb. 4.—For the erection of a medical superintendent's house at Bagueley Sanatorium. The City Architect, Town Hall. Send 1*l*. 1*s*. deposit to the City Treasurer.

MARGATE.—Jan. 30.—For the general builder's work in the erection of a large concert hall with arena and colonnade at the Fort. Deposit 5*l*. 5*s*. Mr. Ernest A. Borg, borough engineer, 13 Grosvenor Place, Margate.

MARSDEN.—Jan. 27.—For various works required in erection of a caretaker's lodge to the new recreation ground at Marsden, Yorks. Messrs. John Kirk & Sons, architects, John William Street, Huddersfield.

OLD SODBURY.—Feb. 1.—For carrying out alterations and enlargement of Old Sodbury school (Glos). Mr. W. C. Wilcox, Old Sodbury House, near Chipping Sodbury.

OXENHOPE.—For the work required in alterations and additions to Manorlands, Oxenhope, Yorks. Messrs. Moore & Crabtree, architects, York Chambers, Keighley.

OXFORD.—Jan. 27.—For erection of county offices in New Road. Deposit 2*l*. 2*s*. Mr. Sidney Stallard, county surveyor, 8 New Road, Oxford.

ROWLANDS GILL.—For erection of fourteen cottages at Highfield, near Rowlands Gill, Durham, for the Burnopfield Co-operative Society. Mr. A. C. Wood, architect, Burnopfield.

ROWLANDS GILL.—For erection of two houses at Highfield, near Rowland's Gill, Durham, for the Burnopfield Co-operative Society. Mr. A. C. Wood, architect, Burnopfield.

SCOTLAND.—Feb. 1.—The Royal National Lifeboat Institution invite tenders for the construction of a corrugated steel and timber lifeboat house and solid concrete and reinforced concrete (Considere system) slipway near the entrance to the South Harbour, Peterhead. Deposit 1*l*. Mr. Robert Gray, local hon. secretary, Peterhead, Aberdeenshire, or Mr. W. T. Douglass, M.Inst.C.E., 15 Victoria Street, Westminster, S.W.

SETTLE.—Jan. 28.—For joiner, slater, plasterer, and plumber work required in the erection of six dwelling houses in Batty Croft Gardens. Mr. W. K. Mattinson, architect, Austwick, Lancaster.

SHIPLEY (YORKS).—For the works of the several trades (mason and bricklayer, carpenter and joiner, plasterer, plumber, tiler), required in the erection of a detached residence, Staveley Road, Nab Wood. Send names to Messrs. W. Wilcock & Son, architects and surveyors, 9 Leeds Road, Bradford.

SOUTHGATE.—Jan. 31.—For erection of an iron shed at the Council Depot, Palmer's Green. Mr. C. G. Lawson, surveyor, Council Offices, Palmer's Green, N.

WALES.—Jan. 21.—For erection of a private boarding house in Llandilo. Send names by Jan. 21 to Mr. Arthur S. Williams, M.S.A., architect, Llandilo.

WALES.—Jan. 21.—For re-building of New Inn Hotel, Treherbert, Rhondda Valley, for Messrs. D. John & Co., Ltd. Send names and 2*l*. 2*s*. deposit by Jan. 21 to Mr. W. D. Morgan, architect, 194 Ystrad Road, Pentre, Rhondda.

WALES.—Jan. 23.—For erection of a residence at Tylorstown. Deposit 1*l*. 1*s*. Messrs. A. O. Evans, Williams & Evans, architects, Pontypridd.

WALES.—Jan. 25.—For the following works, for the Glamorgan County Council:—(1) Erection of a cottage at Marcross, Llanwit Major; (2) alteration and adaptation of the existing farm buildings. The Glamorgan County Offices, Westgate Street, Cardiff, or the County Police Station, Llanwit Major.

WALES.—Jan. 25.—For erection of eighteen houses at Lower Bridge Street, Pyle, near Bridgend. Mr. Aneurin T. James, architect and surveyor, Bisley House, Pyle, near Bridgend.

WALES.—Jan. 26.—For building the lower portion of new church in Alban Road, Llanelly. Deposit 2*l*. 2*s*. The Stepney Estate Office, Llanelly, and Mr. E. M. Bruce Vaughan, F.R.I.B.A., architect, Cardiff.

WALES.—Feb. 1.—For erection of the Rhydybont Congregational Chapel, Llanybyther, Carmarthenshire. Mr. W. Beddoe Rees, architect, 3 Dumfries Place, Cardiff.

WALES.—Feb. 1.—The Royal National Lifeboat Institution invite tenders for the construction of a corrugated

steel and timber lifeboat house, reinforced concrete (Hennebique system) slipway and reinforced concrete and steel approach gangway at Fryar's Weir, near Beaumaris, in the County of Anglesey. Deposit 1*l.* Mr. James Hartley Burton, local hon. secretary, Fryars, Beaumaris, or Mr. W. T. Douglass, M.Inst.C.E., 15 Victoria Street, Westminster, S.W.

WALES.—Feb. 6.—For erection of an infants' school at Lower Pentrebach, Merthyr Tydfil, for the education committee. Deposit 2*l.* 2*s.* Deputy Surveyor, Town Hall, Merthyr Tydfil.

WALES.—Feb. 7.—For erection of eighteen semi-detached villas at Treforest. Messrs. Gibson, Parry Williams & Co., architects and surveyors, Capital and Counties Bank Chambers, Pontypridd.

WALSALL.—Feb. 7.—For the work required in the alterations and additions to the electrical generating station in Wolverhampton Street. Deposit 1*l.* 1*s.* The Borough Electrical Engineer, Council House, Walsall.

WATFORD.—Feb. 8.—For the erection and completion of a Domestic Economy Centre at Grosvenor Road. Deposit 2*l.* 2*s.* Mr. Urban A. Smith, county surveyor, Hatfield.

TENDERS.

LONDON.

For the erection of condenser house and store at Britannic Works, East Greenwich. Mr. A. C. RUSSELL, architect, 13 Basinghall Street, E.C.

Martin	£766	0	0
Holloway	758	0	0
Mills & Son	727	0	0
GROVES, Greenwich (accepted)	715	0	0

For fencing at Russell Hill waterworks, for the Croydon Town Council.

Davis & Co.	£915	4	6
Longley	900	15	0
Longley & Sons	812	15	0
Stevens	763	14	0
Marshall	739	5	0
Brooker	736	5	0
Stenning	729	15	0
Turner & Son	722	1	0
Rowland Bros.	709	8	2
Lee & Hamilton	703	8	3
Stenning & Son	691	15	0
J. & S. Agate	641	19	7
Mulford	622	11	6
Brooker	605	15	0
White	601	5	0
BLAY, New Malden (accepted)	581	15	0
Millar's Karri and Jarrah Co.	570	2	6

MICKLETON.

For erecting four cottages for Campden Rural District Council. Mr. CHARLES J. SANDER, surveyor to the Council, Shipston-on-Stour.

Fincher	£905	0	0
Lissaman	698	0	0
White	666	0	0
Espley & Co.	640	0	0
Grinnell	630	0	0
Adams	575	0	0

NEWCASTLE.

For the erection of the King Edward VII. School of Art, Armstrong College. Mr. W. H. KNOWLES, F.S.A., architect, Newcastle.

Kirk & Brown	£19,737	12	11
Elliott Bros.	18,126	8	3
Ferguson	17,356	3	6
Middlemass Bros.	17,323	18	1
Fenwick & Co.	17,104	0	0
Hope	17,020	0	0
White	16,980	0	0
Franklin & Son	16,711	11	5
Blackett & Son	16,524	0	0
Lumsden	16,493	0	0
Haswell & Waugh	16,266	0	0
Davidson & Miller	16,174	15	5
Weatherley	16,138	0	0
S. Easton, Ltd.	15,922	0	0
Milne	15,851	0	8
George & Son	15,850	0	0
J. & W. Lowry	15,763	0	0
PRINGLE, Gateshead (accepted)	15,349	0	0

RAYLEIGH.

For the erection of a villa at Rayleigh, Essex, for Mrs. C. E. Norton. Mr. EDWARD BROWN, architect and surveyor, 31 Gunton Road, Clapton.

BAKER, Thundersley (accepted)	£356	0	0
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ST. ALBANS.

For erection of an isolation hospital adjacent to the Sisters' Hospital at Folly Mead.

Dumpleton	£2,096	19	6
Vail & Shore	1,927	0	0
Miskin & Sons	1,885	0	0
BUSHELL, St. Albans (accepted)	1,749	0	0

SCARBOROUGH.

For the construction of an engine-house, &c., at the Cayton Bay Pumping Station.

Atkinson & Son	£1,035	0	0
Hunter & Smith	1,006	0	0
Jowsey	966	0	0
Watkinson	941	0	0
Jaram & Son	904	0	0
Petch	850	0	0
Plaxton	808	0	0
Carr & Creaser	788	0	0
Hovington	784	0	0
BASTIMAN & SON, Scarborough (accepted)	777	0	0

SHARNBROOK.

For erection of a Wesleyan church. Mr. T. COCKRILL, A.M.I.C.E., architect, Bedford and Biggleswade.

H. Wright	£495	15	4
C. Wright	471	0	0
Pacey	445	0	0
Freshwater & Son	423	0	0
Dawes	412	0	0
WRYCROFT & SON, St. Neots (accepted)	407	10	0

THORNBURY.

For the construction of a cattle market and contingent works at Streamlaze, Thornbury. Mr. T. B. COOPER, engineer, Bristol.

Priest & Son	£4,988	4	1
Lovell	4,386	3	8
Elliott & Co.	4,067	12	0
Mereweather & Sons	3,795	0	0
Chivers	3,531	15	1
Stephens & Bastow	3,497	0	0
Hill & Smith	3,443	16	0
Gluyas	3,270	17	0
Perkins & Sons	3,175	0	0
Walters & Son	3,172	16	0
Lovell & Sons	3,167	14	9
Patterson	3,158	0	0
Denham	3,152	3	9
Adams & Jeffries	3,100	0	0
Coles	3,006	14	6
Joiner	2,925	0	0
NICHOLS, Gloucester (accepted)	2,894	0	0

WALES.

For constructing roads, sewers, &c., at Abertridwr (near Caerphilly). Mr. ILLTYD THOMAS, F.S.I., Cardiff.

Prothero	£527	5	2
Hatherley & Co.	500	11	0
Davies & Co.	443	18	3
Davies	348	14	6
Denham	343	1	7
Lewis & Sons	332	12	4
Collins & Co.	320	19	9
Barnes, Chaplin & Co.	308	6	10
WILLIAMS, Abertridwr (accepted)	293	15	8

For erection of a police court house at Ammanford, Carmarthenshire. Mr. W. LIONEL JENKINS, A.M.I.C.E., P.A.S.I., county surveyor, Llandilo.

Davies	£2,473	0	0
Mercer	2,390	0	0
Evans & Sons	2,349	0	0
Williams	2,299	10	0
Spencer, Santo & Co.	2,175	0	0
John & Co.	2,141	19	11
Howells & Sons	1,805	0	0
Jones Bros., Ammanford*	1,800	0	0
County Surveyor's estimate	1,750	0	0

* Accepted at £1,855, Forest of Dean stone substituted for Bath stone, as provided in specification.

WALES—continued.

For converting the old Vicarage House, Bangor, into a church house. Mr. HAROLD HUGHES, architect, Bangor.

Jones & Williams	£1,394	0	0
R. J. Jones	1,370	0	0
R. & J. Williams	1,342	0	0
Evans	1,295	0	0
Jones & Son	1,282	0	0
R. D. & H. Hughes	1,276	18	0
J. M. Jones	1,267	0	0
PARRY, Bangor (accepted)	1,198	0	0

For the erection of a higher elementary school at Caerphilly, Glamorgan. Mr. D. PUGH-JONES, F.S.I., county architect, Cardiff.

W. Williams	£11,980	0	0
Lougher & Co.	10,528	10	0
Davies & Sons	10,300	0	0
Beames	10,098	0	0
J. Williams	9,950	0	0
Shail	9,900	0	0
Hamilton & Millard	9,650	0	0
Howells	9,491	7	4
BOND, Cardiff (accepted)	9,447	2	4
Jones	9,015	2	6
Handcock	8,691	6	9

WALTHAMSTOW.

For erection of a new block of out offices, removal of old offices, new iron fencing, and sundry other works at the Higham Hill Girls' School, for the Walthamstow Education Committee. Mr. H. PROSSER, M.S.A., architect.

Harston & Co.	£272	10	0
Lown & Co.	267	18	0
Sands	265	15	0
Hammond & Son	260	0	0
R. & E. Evans	243	0	0
Coxhead	239	0	0
Dainton	239	0	0
Wood Bros.	224	17	6
Horswill	224	0	0
J. & J. Dean	215	0	0
Page, Walthamstow (recommended)	215	0	0

For the provision and erection of about 1,250-foot run of wrought-iron unclimbable fencing, with dwarf wall to frontage portion, with gates, pillars and sundry work, on the Longfield Avenue site, for the Walthamstow Education Committee. Mr. H. PROSSER, M.S.A., architect to the committee.

Wood Bros.	£516	17	6
Page	500	0	0
Coxhead	498	0	0
R. & E. Evans	476	0	0
Couper	475	13	6
Hammond & Son	460	0	0
Sands	450	0	0
Horswill	429	0	0
J. & J. Dean, Walthamstow (recommended)	422	0	0

WELLINGBOROUGH.

For erection of new house at the workhouse for the master and matron, for the Guardians.

Thompson	£700	0	0
Brown & Son	650	0	0
Goodman & Murkett	645	0	0
Adams	638	8	0
Drever	637	0	0
Hacksley Bros.	634	0	0
Berril & Green	633	0	0
Stevens	632	0	0
Marriott, Wellingborough (recommended)	609	0	0

WIGAN.

For the construction of dressing boxes, &c., at the Public Baths, Millgate.

Fairhurst & Son	£599	10	0
Wilson & Co.	585	0	0
Rhodes	540	0	0
Johnson & Son	516	0	0
Bywater & Son	495	0	0
ABLETT, Wigan (accepted)	485	0	0

WORTHING.

For execution of the several works required to be done in the reinstatement of the boundary railings, gates, piers, &c., at the Public Library and Museum. Mr. T. A. POLE, A.R.I.B.A., 10 Gray's Inn Square, W.C.

F. Sandell & Sons	£208	0	0
W. J. East	194	0	0
J. A. East	189	0	0

VARIETIES.

THE Blyth Education Authority propose to borrow 10,000*l.* to erect a new secondary school at Blyth.

THE Local Government Board have sanctioned the borrowing of 3,433*l.* for the purchase of a site for the proposed new training college at Bolton.

THE Bowling United Free Church, N.B., is to be enlarged at a cost of 1,000*l.*, from the plans prepared by Mr. W. F. M'Gibbon, F.R.I.B.A., Glasgow.

A SITE has been purchased for the erection of a new police court in Epsom almost immediately opposite the present building.

THE Halifax Town Council at its next monthly meeting will consider a recommendation of the Highways Committee that tenders be obtained for the construction of percolating filters at the Salterhebble Sewage Works at an estimated cost of 10,000*l.*

THE interment took place on Tuesday, at Whitby Cemetery, of Mr. Edward H. Smales, A.R.I.B.A., vice-chairman of the Whitby Urban Council, who died suddenly in the grounds of his residence, Arundel Howe, on the 13th inst., from heart disease.

THE total estimate of the Town Improvement and Streets Committee of the Newcastle-on-Tyne Corporation, under the heading of streets and sewers, is 40,328*l.* (exclusive of "desirable works," 10,228*l.*, and suggested paving loan, 19,322*l.*), as against last year's estimate of 32,608*l.*

HARTLEPOOL Guardians, after repeated representations on the subject of children's homes from the Local Government Board, have submitted a scheme for the erection of buildings adjoining the workhouse to accommodate 150 children. The estimated cost is 10,000*l.*

THE Estates Committee of the Birmingham City Council last week considered the question of erecting a verandah around the Town Hall. The committee viewed the suggestion sympathetically, but found difficulty in formulating a plan which would not mar the architectural features of the building, and no definite decision was come to.

MR. J. B. DUNN, F.R.I.B.A., architect, Edinburgh, has prepared plans, which were passed last week by the Dean of Guild Court, for the erection of the Charteris Memorial Church, at the corner of the Pleasance and Brown Street, Edinburgh. It is proposed to take down two tenements and to erect the church, a hall and offices, a caretaker's house, and a surgeon's house in connection with the Deaconess Hospital.

THE Carpenters' Company has again issued particulars of a course of lectures to be delivered in their hall on the Arts Connected with Building. The names of the lecturers are a sufficient guarantee for their excellence. These lectures have been inaugurated by this company to complete, as far as may be, the series of lectures given by them, bridging, as it were, the gulf between their popular lectures and their highly technical ones on Carpentry and Building Construction. The first lecture will be given on the 25th inst., at 7.45 p.m., by Mr. T. Raffles Davison, the subject being "Truth in Craftsmanship."

THE Aberdeen Granite Association have agreed upon a new scale of prices for English work, which came into operation this week. The prices are graded according to the different varieties of work, and while in the case of merchants who have been cutting rates keenly the minimum decided upon is on an average 10 per cent. of an increase, in other instances, where manufacturers have insisted on their own figures, the new rates are slightly down; and an important feature is that no preference will in future be given to agents. They are to be placed on the same footing as direct customers, and by this step it is hoped to secure the abolition of the middleman in the granite trade. Some time ago similar action was taken in connection with American and Canadian orders, prices being considerably advanced.

THE principal linings granted in Glasgow Dean of Guild Court on the 12th inst. were:—Mr. J. Allan, engineer, 10 Cadogan Street, to erect workshops in Cadogan Street; Messrs. Brown, Stewart & Co., Ltd., Dalmarnock Paper Mills, 296 Springfield Road, to erect a pulp store; Messrs. J. P. M'Phun & Co., timber importers, 40 Mill Street, Bridgeton, to extend their works; Messrs. Reeves, Ltd., 14 Appold Street, London, E.C., to erect buildings on the east side of Stamford Street and the north side of Barrowfield Street; the Cathcart School Board, 104 West Regent Street, to erect public school buildings in Cathkin Road, Langside; the Glasgow Corporation, to erect sanitary slaughter-house, offices, &c., in Hill Street; Mr. J. Porter, house factor, 577 Dalmarnock Road, to erect tenements of shops and dwelling-houses on the north-east side of Dalmarnock Road.

THE LAYING OUT OF A BUILDING ESTATE.—III.

Thursday evening, at the Hall of the Law Society, Mr. J. Naldrett delivered his fourth and concluding lecture on Local Government Law affecting the Laying-out and development of Building Estates. Dealing with the law relating to sewage matters in the Metropolis, he said that in any respects it was similar to that outside the Metropolitan area, but it was derived from different sources. The main sewers were subject to the jurisdiction of the London County Council, and all other sewers, which might be referred to as local sewers, were under the jurisdiction and control of the Metropolitan, City, and Borough Councils. The local authorities were, however, subject to orders and laws made by the London County Council for their guidance and control on matters relating to sewerage and drainage. The duty was imposed on the borough councils to maintain and repair the sewers vested in them, and for this purpose they could carry sewers through streets and other places and through or under any private lands, paying compensation in the latter case for any damage done. Similar power was conferred on the County Council with regard to main sewers. No new sewer could be made without the approval of the County Council, but existing sewers could be discontinued provided that the Council made a new sewer. If mains were interfered with, other drains equally effective must be substituted for those destroyed. No sewer or drain could be branched into a sewer of either the County Council or a borough council without consent of the respective authority. Since 1856 the local authority could recover the cost from the owners of land and buildings fronting a street in laying a sewer in such street. An owner must be very careful to obtain the necessary consent and to comply with all the regulations before branching into a sewer, or he could render himself liable to penalties. Where a house was built and was not sufficiently drained to the satisfaction of the local authority, and there was a sewer available within 100 feet of the building, the authority could by notice require the owner to drain into such sewer, and if the owner failed to comply, then the authority could do the work and recover the cost, or they might proceed against the owner for penalties. Within the Metropolis the local authority had power to inspect drains, and if they were found to be in bad order they could call on the owner to do the necessary work, and if he failed to do it, then they could themselves carry it out and recover the cost. An owner might construct sewers himself, subject to the consent of the authority and in conformity with the regulations, and the borough council might contribute to the cost. Section 74 of the Metropolis Management Act, 1855, dealt with sewerage by a combined operation, and it was laid down that, if it appeared to the authority that a group or block of houses could be drained more economically and advantageously by a combined operation, it should be lawful for them to approve of such a system. If made before 1848 a pipe receiving the drainage of more than one house would be a sewer, but if made since 1848 it might be treated as sewerage by a combined operation, and the owner might be required to keep it in proper repair. The burden of proving that such a system was best rested upon the local authority, but a formal order authorising a combined operation was not necessary. It was sufficient if a local authority gave their approval to a scheme of drainage, and approval might be inferred from the surrounding circumstances; but in the case of "Hugh v. Billings" it was decided that a local authority could not delegate its powers of approval to an official. In the case of "Holland v. Lazarus" (1897) it was held that the fact that a rainwater pipe was introduced into the system made the combined drain a sewer. In "Green v. Newington Vestry" (1898) it was proved that four houses were drained by a combined operation under the approval of the local authority, and subsequently, without the knowledge of either the local authority or the owner of the four houses, a drain from another building was constructed and connected with the first drain. It was held that this had the effect of converting the combined drain into a sewer for which the local authority was responsible. It was quite clear from this and other decisions that such a system of drainage, in order to sustain its status as a drain, must be made as sanctioned by the local authority, and there must not be any departure from the plan in any material particular. It would be a material departure if a system for four houses were sanctioned and one of the group of four was left out and two others were brought in ("Bullock v. Reeve"). At the same time, it had been held in the case of "Wilson and Music and General Printing Co. v. Finsbury Borough Council" (1910) that a person could

not take advantage of his own wrongful act, as in the making of an unauthorised connection. Proceeding to touch on the London Building Acts, 1894, 1898, and 1905, Mr. Naldrett said he could only briefly indicate the matters dealt with, because the principal Act of 1894 contained nearly 200 sections and schedules. The Act was divided into sixteen parts. Part II. governed the formation and widening of streets, and Part III. dealt with the important matter of the lines of building frontage. Without the consent of the County Council no building could be erected beyond the general line of buildings in a street, place, or row of houses in which it was situated in case the distance of such line of buildings from the highway did not exceed 50 feet, or within 50 feet where the line of building was 50 feet or more from the highway. This was necessary notwithstanding that there were gardens or vacant spaces between the line of buildings and the highway. The section did not apply to the re-erection of a building or a site lawfully occupied, but when a projecting building was taken down the Council might require the new building to be set back and the owner might be entitled to compensation. Part VI. dealt in great detail with the construction of buildings, but it was useful to note that the London County Council General Powers Act, 1908, contained provisions in relation to the erection of large buildings of the warehouse class. In many parts of the Metropolis land was so costly that neighbouring owners agreed to have one wall instead of two for the superstructure of a building, and this was called a party wall. The rights of owners in relation to such walls were regulated by the provisions of Part VIII. of the Act. The Metropolis was divided into districts, for which district surveyors were appointed, and extensive powers were in the hands of the County Council in relation to these districts and surveyors. Speaking generally, every building and all matters in relation to the width and formation of streets, the general line of buildings, the provision of spaces about buildings, the height of buildings, and so on, were subject to the supervision of the appointed district surveyor. These district surveyors were persons having statutory duties, and they were not the servants of the London County Council. The Act of 1898 contained a few amendments of the earlier Act, whilst the Act of 1905 was directed generally to the provision of means of escape in case of fire in connection with buildings. By means of the Public Health Acts and other Acts relating to the Housing of the Working Classes, the Legislature had from time to time effected important improvements in the dwellings of the working classes, particularly in populous districts where insanitary conditions prevailed. These Acts, however, had been mainly directed to the removal of existing evils, but with the passing of the Housing and Town Planning Act a new departure had been made. The object of the town-planning provisions as described by the Local Government Board was to ensure by means of schemes, which might be prepared either by the local authority or by the landowners, that in future land in the vicinity of towns should be developed in such a way as to ensure proper sanitary conditions and to have regard to the amenities and convenience of the neighbouring lands. Hitherto the conflicting interests of different owners and the absence of any power on the part of the local authority to guide and control such development had resulted to a considerable extent in the development of estates with a sole regard to the immediate interests of the particular estate and without regard to the amenity and convenience of neighbouring lands. The Town Planning Act involved a material difference in the relations between the owners of land and local authorities, and enabled each party to co-operate with the other in promoting the general interest. The importance of such co-operation was fully recognised by the Act, and Section 56 provided for securing this co-operation by conferences and otherwise. He thought it might safely be assumed that land in the course of development as a building estate fell within the town-planning part of the Act. Mr. Naldrett proceeded to refer briefly to the different sections of the Act, and pointed to the fourth schedule as showing the large number of matters which might be dealt with under a town-planning scheme. The Local Government Board had issued regulations which were of a somewhat complicated character, but which anyone who intended to proceed under the Act ought to very carefully study. The President of the Local Government Board was very hopeful about the Act, and it was stated that thirty-one local authorities were taking action under its provisions. The machinery was necessarily of an elaborate character, but the proceedings were certainly of a very elastic kind. The central authority was invested with powers over owners and their property of a far- and wide-reaching description,

and its decisions were often final and could not be revised by a Court of Law. The authorities entrusted with the administration of the Act would be face to face with the persistent difficulty of harmonising conflicting interests. If there were any present who aspired to become successful town planners they would have the opportunity of exercising their best abilities, and he thought the widest experience might be turned to profitable account. There would be an opportunity of developing hygienic principles and of exercising a great deal of diplomatic skill in reconciling various conflicting interests. Still, he thought the Act must be recognised as embodying a praiseworthy attempt to prevent evils arising such as in the past it had been found extremely difficult and costly to remedy.

IRON: ITS WORKER AND A PORTION OF HIS WORK.*

If we look in a standard dictionary for the word "smith" we find it defined as "one who forges with a hammer," and we learn, further, that in derivation it is akin to "smooth"—Anglo-Saxon "smoethe," "flattened with a hammer." Thus, in the earliest times in our own country, the skilled character of smithcraft was sufficiently recognised among the people for a word, at first associated with the trade, to pass into the language conveying the idea of smoothing or finishing carefully.

But, of course, we only refer to the Anglo-Saxon for the origin of the word. For the origin of the trade itself we need to go very much farther back in the world's history. In fact, it is impossible to say definitely when and where the smith first plied his trade.

Probably iron had been discovered in its rarest form (that is, in the free state) and worked in small quantities centuries before the first smelted iron was extracted from its ore. We know that meteors are constantly falling into the atmosphere from outer space. These are generally of considerable size, and being heated to incandescence in their terrific plunge earthwards, they are seen to burn themselves out as falling stars at night-time. In rare cases, however, these wandering bodies are large enough to reach the earth unconsumed, and when examined, are very often found to consist of iron, practically pure, or alloyed with nickel.

In this form, however, iron can be looked upon as a precious metal, and as such is hardly in the scope of our present sketch. Suffice it to say that it was used by the ancients for articles of adornment, such as finger-rings, the meteoric origin being proved by the presence of nickel.

In the earliest days of smelted iron, the smith's treatment of the metal was chiefly for utilitarian purposes, his efforts in ornament being almost entirely confined to bronze, copper, gold, &c.

The knowledge of smelting and working iron, like most other arts, comes from the East. Iron was specially valued for purposes of war, of which, indeed, it was regarded as the symbol, being poetically called "Mars" by the Romans. It is interesting to note, in passing, that the Romans associated other metals with the characteristics of their gods. Thus, lead was sometimes called "Saturn," and copper "Venus," whilst one instance of this Roman nomenclature has actually survived to our own time, quicksilver still being called "Mercury."

We can only conjecture how the art of smelting iron was discovered. Who first applied fire to the ore and made it plastic no one can tell.

Robert Mushet, in his "Papers on Iron and Steel," says that it is probable that the discovery was made through the accidental burning of a wood in Greece. "For," says he, "if a mass of iron ore were accidentally dropped into the middle of the burning pile during a period of neglect, or during the existence of a thorough draught, a mixed mass, partly earthy and partly metallic, would be obtained, and, if the ore were rich in iron, this mass might be of perfectly malleable iron."

Later researches tend to show that iron was used in the age of the Mycenaean civilisation, which preceded that of Greece by a thousand years, and belonged chronologically to the Bronze Age; whilst if we can trust Chinese historical documents, we must believe that one Fuh-he accidentally smelted iron when destroying a forest by fire, and made use of it for weapons, exactly as in the Greek tradition, but some two thousand years earlier.

And again, Tubal Cain, seven generations in descent

* Read before the members of the Incorporated Clerks of Works Association on January 9 by A. Percy Witchell.

from Adam, is referred to in Biblical history as "an instructor of every artificer in brass and iron."

However, the metal and its uses once discovered, many attempts would be made to give to that which had probably been the result of an accident, the permanence of a definite process, and the fact remains that the knowledge of its treatment in a greater or less degree is found in all parts of the globe.

The low conical furnaces employed at this day by some of the tribes of Central and Southern Africa are, perhaps, very much the same in character as those adopted by the early smelters of all countries when iron was first used. Small openings at the lower end of the cone to admit air and a larger orifice at the top would, with charcoal, be sufficient to produce the requisite degree of heat for the reduction of the ore. Blasts of different kinds follow as inventiveness grows.

The simpler the smelting, the better appears to be the iron. Dr. Livingstone found the natives on the Zambesi refuse English iron, preferring their own, a sample of which was pronounced by a skilled British smith to strongly resemble the modern Swedish iron, whilst the famous "Wootz" or steel of India, from which Damascus sword blades were made, possesses qualities which no European steel can surpass.

Captain Cook, in his voyages, however, discovered islands in the South Seas where iron was unknown. After expressing surprise at the eagerness which the natives displayed for iron, he says that "a nail would buy a good-sized pig, and for iron tools everything upon the Freewill Islands that could have been brought away might have been bought. One native lurked about for days watching the opportunity to steal a coal rake, and an Otaheitan chief, who had given two nails, received no small emolument by letting out the use of them to his neighbours for the purpose of boring holes when their own methods failed."

Dr. Eric Marshall, of the British Expedition now exploring hitherto unknown parts of Dutch New Guinea, says, in a letter published last month, that he came across a race of pigmies whose only metal tool consists of a small wedge-shaped piece of iron, 1 inch by 2 inch, inserted into a wooden handle, answering the purpose of an axe. With this alone they had made a 20-acre clearing from an apparently impenetrable forest, many of the trees of which were at least 12 or 15 feet in circumference, "and," says he, "none but those who have worked and toiled in this dense jungle can really appreciate the perseverance and patience necessary to accomplish this." Dr. Marshall further tells us that these valuable scraps of iron were bartered to the inhabitants by coast-trading natives in exchange for one or more of their women per piece. Evidently, we have here a state of society not yet advanced from the age when iron was considered a precious metal.

The early history of iron in Britain is necessarily very obscure. It appears to have been worked before the time of the Romans, although the stories told of ancient British chariots armed with swords and scythes must be taken to refer to bronze weapons, as iron certainly was not worked in sufficient quantities for equipping armies, or, at any rate, its existence to that extent is not borne out by contemporary facts. The Romans themselves frequently had recourse to weapons of bronze, as they could not obtain iron in sufficient quantities. According to Cæsar, the British used as their only money pieces of brass and iron reduced to standard weight.

In commenting on this latter fact, in his "Wealth of Nations," published in 1776, Adam Smith said, "There is at this day a village in Scotland where the workmen carry nails instead of money to the baker's shop or the ale-house."

Remnants of the earliest form of iron-smelting survive in the cinder-heaps of the Forest of Dean and in parts of Sussex, notably at Maresfield. In the latter place coins of A.D. 69 have been discovered among the heaps, affording indication of very early workings.

No mention of smelting in Sussex is made, however, in the Domesday Book, which circumstance points to the fact that its manufacture there ceased, for the time being, at the Conquest.

Very early in the Middle Ages we find the smelting and working of iron being carried on in other places widely separated, in many instances under the supervision of monks and sometimes with their active co-operation. Did not St. Dunstan have a forge even in his own bedroom at Glastonbury and, when the Devil came to tempt him, did he not seize his Satanic Majesty with red-hot pincers, so that he fled in pain and terror?

Another monk, Anketil by name, of St. Albans in the

fifteenth century made work of such excellence that it was consecrated to St. Peter, and, being presented to the Pope, the means of obtaining high ecclesiastical distinction for the Abbey at St. Albans.

In the thirteenth and fourteenth centuries, however, the iron industry revived in Sussex, which eventually eclipsed all other iron-producing districts of the country in its output. In the neighbourhood of Ashburnham from Ashburnham to Crowborough supplied both iron and the timber for working it; and these works remained the most important in the country until the discovery of iron smelting by pit-coal.

Simon Sturtevant, in his "Treatise of Metallica," published in 1612, says that the whole number of iron-mills in England and Wales numbered 800, of which 400 were in Sussex, Kent and Sussex.

John Norden, in his "Surveyor's Dialogue" (1607), reports that Sussex alone contained nearly 140 hammers and furnaces for iron, each of which consumed every twenty-four hours from two to four loads of charcoal, "which," he remarks, "amount to an infinite quantity in a year."

Probably the largest contract executed in Sussex was the casting of the iron rails which enclose St. Paul's Cathedral, in the early part of the eighteenth century. This work was distributed among several contractors, but the principal part of the casting was carried out at the Gloucester furnace at Tunbridge Wells, the owner of which, John Legas, made a large fortune. These railings cost over £1000.

During the sixteenth century timber had been growing in Sussex, for it was still being used for domestic purposes, as in the case of pit-coal was thought poisonous when burnt in dwellings. So in 1581 an Act was passed to restrict the consumption of wood for smelting purposes within fourteen miles of the Thames, and forbidding the erection of new ironworks within twenty miles of London.

This Act caused a migration of smiths to South Wales. The Sussex iron industry dragged on, however, till the middle of the seventeenth century, when the statutes regarding consumption of fuel were once again rigorously enforced. About the same time the division of Cromwell's army under Waller led to a systematic destruction of all works belonging to royalists, and the combination of hostile conditions practically ended iron smelting in Sussex.

Only eighteen furnaces remained in use in 1664, ten in 1700, and in 1788 there were only two. The last to survive was that at Ashburnham, where, though the furnace was blown out in 1811, the forge was not abandoned till 1822.

The Simon Sturtevant before mentioned seems to have been the pioneer of smelting by coal. At all events, he secured a patent for his process. But although he was, perhaps, correct in theory, his application of it proved a failure.

It is, therefore, to the year 1620 that we must look for the most important step in the history of iron in this country. That year Lord Dudley obtained a patent for thirty-one years for a process suggested by his son, Dud Dudley, and the latter successfully worked it out in the neighbourhood of the town of Dudley and also at Cradley.

His manufacture of iron by coal smelting caused quite a roar among his rivals, who tried unsuccessfully, first to have his patent set aside, and then to ruin him.

Dud's perseverance in the face of opposition, law-suits, calamities and misfortunes was remarkable. His rivals continued to leave no stone unturned to harass him, and eventually got him imprisoned. Charles I. took pity on him, and for a time he carried on his work under the protection of that monarch; but the royal patronage was not to avail him long, and having sided with his King during the Civil War he eventually suffered further imprisonment and the confiscation of his estates.

Nevertheless, as the sole possessor for more than a generation of the secret of successfully smelting iron by coal, the name of Dud Dudley stands out prominently in connection with the history of English ironwork.

About the year 1656 others solved the problem or secured the secret, and thus the treatment of iron by coal developed on its own time.

We have to remember, however, that at this period, as well as in more modern times, much of our iron was imported and only smelted, principally from Sweden.

(To be continued.)

THE "PALLADIUM" ELECTRICAL INSTALLATION.

THERE has just been completed at the recently opened Palladium Theatre of Varieties, Argyll Street, Oxford Circus, W., an electrical installation, which in some respects is unique, and quite in keeping with the reputation of Messrs. Siemens Brothers. The building was erected from the designs of Messrs. Frank Matcham & Co. at a cost of about 250,000*l*. The features of the electrical stage equipment consist of an electric lift, "bunch lights" and proscenium lights, in all 2,400 electric glow lamps, mostly in three different colours. In addition there are eighteen arc lamp projectors, nine being on the stage and nine in the auditorium. In accordance with the scheme of decoration throughout the house the firm designed and made at their Dalton works fittings of the Georgian type. The auditorium is lighted from the roof by means of two 50-light handsome brass electroliers, each 12 feet high and 9 feet in diameter, as well as by a large number of smaller fittings. Holophane reflectors play a large part in the distribution of light. All the glow lamps, of which there are no less than 4,000, are of the Siemens "Tantalum" and "Onewatt" metal-filament types, giving an illumination of about 100,000 candle-power. In addition to the electric lighting there are also several telephone systems and electric bell circuits. The wiring work was sublet to Messrs. Rashleigh Phipps & Co., of Oxford Street.

The stage switchboard is probably the largest of its kind that has yet been installed in this country, and it controls incandescent lights and arc lamps, taking approximately 2,100 amperes at 110 volts. Arrangements have been made by means of "block-out" switches to obtain the necessary scenic effects, and nearly the whole of the lights can be switched on and off simultaneously. The supply is from the three-wire system of the St. James and Pall Mall Co., at 110 to 220 volts, with a small alternative supply for the house lighting. Adequate precautions have been made against the danger arising from a short circuit by the introduction in each of the 90 circuits of double pole fuses of the Siemens "Zed" type and a single-pole knife switch.

The complete regulation of the stage lighting in respect of colour, dimming, and illumination is effected by the stage regulator, the most important electrical part of a theatre installation. This apparatus centralises the whole of the stage lighting fittings, and permits of producing in each separate group of lamps entirely in accordance with the will of the operator, all desired variations and combinations of light intensities and colours. The dimmer resistances used here differ in construction from those usually employed, metal resistances being substituted for liquid resistances. The total current arranged for on the Palladium stage regulators is 1,140 amperes.

A portion of the stage floor, 20 feet by 10 feet, is being arranged as an electrically driven lift, capable of sustaining a load of 20 tons. It is operated by a Siemens electric motor.

This arrangement facilitates the removal of scenery and properties to the basement, and provides for special scenic effects. A complete suction cleaning service is installed all over the auditorium, saloons, corridors, &c. The "Vortex" cleaner machine in the basement is directly driven by a 5 horse-power 220 volt continuous current motor, and the dust, &c., is passed through a mixing chamber directly into the drains. A number of "Lightning" arc lamps are provided. These lamps are connected to a multiple way switchboard. This switch is of the rotating type, and when the handle is moved round rapidly the lamps are switched on in rapid succession and a forked "lightning" effect is produced.

To assist in the ventilation of the auditorium typhoon fans to the number of fifty are to be mounted on the ceilings under the balconies, and a number of table fans are provided for the saloons, &c. As previously mentioned the main boards are equipped with "Zed" fuses. These boards are the last word in goods of this kind. The board cases are of hand polished teak, or sheet or cast iron, and are asbestos-lined glazed with plate-glass and fitted with circuit labels and strong lever locks, in accordance with the architects' specifications, although the cases have been asbestos-lined in deference to former practice. This is superfluous in view of the absolute safety which the "Zed" fuse guarantees. There is also an adequate installation of telephonic communication between the various parts of the house.

It is stated that a large new music-hall is to be shortly erected in the centre of Bristol by the syndicate headed by Mr. Oswald Stoll.

The Medway Guardians have adopted plans for extensions of the infirmary to cost 1,350*l*.

THE LATE MR. ANDREW MURRAY.

WE regret to announce the death of Mr. Andrew Murray, F.R.I.B.A., of 9 Marlborough Hill, N.W., the late surveyor to the City of London. Mr. Murray was seventy-two years of age, and was in the Corporation employ for fifty years. Entering at the Guildhall as a lad, he completed fifty years' service and retired in 1905. No surveyor of the Corporation had a better knowledge of the City estates. Buildings designed by him included the City of London Court, various buildings at the Stone Asylum, Dartford, Kent; City of London Girls' School on the Embankment, the extensions to the Guildhall School of Music, and numerous smaller buildings in connection with the Corporation.

NEW CATALOGUES.

A most commendable spirit of co-operation between architect and manufacturer is shown in the "Book of Gates" issued by E. C. White, of the Canal Wharf, Basingstoke. The book is artistically produced and contains twenty designs for wooden gates which have been made by Mr. A. Jessop Hardwick, F.R.I.B.A. The illustrations that have appeared from time to time in our columns of that architect's work show it to be refined, especially in its details. That same spirit is exemplified in the single and double gates shown in the small booklet. Each design possesses distinction while still retaining an air of restraint. Any one of the gates, with their hand-made ironwork, would be an ornamental accessory to a house. The book gives the necessary dimensions, and the net price in oak and deal. Mr. E. C. White is ready to quote special estimates for variations in sizes in any of the patterns, for customer's own designs or for lots of six sets and up.

THE latest booklet issued by the Old Delabole Slate Co., Ltd., is more concerned with the present than the past. For with the exception of one or two occasional references there is little stress laid on the notable fact that the quarries are the oldest in the country, having been opened in 1555. Such letterpress as there is, however, does not omit to point out that while immortality is claimed for artificial roofings on the strength of a few years' experience, Old Delabole slates which were laid a couple of centuries ago are still in excellent preservation. But the main purpose of the booklet is to prove the quarries' popularity among contemporary architects and the slate's suitability for the most exacting needs. This is chiefly done with the aid of very interesting photographs showing different jobs on which they have been more or less recently used, and by the inclusion of an imposing list of important Government, public, and private buildings which testify to the quality of "Old Delabole" slate. Delabole was the first quarry in the British Isles to make a speciality of the rustic, random, and diminishing course roof, and the proprietors have always sought to make their slates compatible with artistic effects.

MESSRS. JOSEPH GRIGGS & CO., LTD., timber importers, &c., Loughborough, have issued a new 56-page catalogue of mouldings and prepared joinery, which should prove of value to prospective customers. The mouldings turned out by this firm are manufactured from best seasoned red deal and perfectly finished off by hand after leaving the machines. The greater number of the pages are illustrative of these mouldings as made for purposes like architraves, panels, skirtings, and handrails. Towards the end of the book, however, room is found for windows, doors, entrance gates, newels, balusters, and wood-block flooring. Messrs. Griggs & Co. are contractors for every description of wood-block flooring and paving, and are prepared to execute any design in any description of soft or hard woods.

RATNER SAFE CO., LTD., are able to keep pace with the ever-increasing resource of the scientific burglar and safe-breaker, as well as to successfully resist the attacks of fire. Their latest catalogue affords an instructive insight into the means taken to render Ratner twelve-corner-bent steel safes fire, fall, and thief resisting.

MESSRS. JOHN RUSSELL & CO., LTD., have issued an illustrated price-list of their incandescent gas-light fittings, burners, globes, and accessories. In addition to having numerous standard patterns the firm are willing to carry out an architect's design or to submit special designs to harmonise with the general effect. The firm have a number of patent lamps of their own, including the "Graetzin" and "Colston." Their manufactories are at Birmingham, Wednesbury, and Walsall, and they have several depots in London and the provinces.

TRADE NOTES.

A LARGE clock has just been fixed at Ashington Church, Essex, as a memorial to His Majesty the late King Edward VII. The work has been carried out by Messrs. John Stiles & Sons, Midland Clock Works, Derby, who have also restored and refixed the large clock and chimes in the tower of Ilkeston parish church.

IN the list of contracts recently executed by Diespeker Ltd., given in this column last week, we incorrectly included work at Kingsway House, Aldwych (Messrs. Gordon & Gordon, architects).

THE Board of Guardians of the Gateshead Union, having decided to improve the arrangements for the escape of inmates in case of fire, has just purchased a new specially designed fire escape of Merryweathers' "self-supporting" pattern. It has three telescopic ladders extending to a height of 40 feet, and its great feature lies in the fact that it can stand entirely self-supported, with a man at the top of the ladders, without resting against a building and without the aid of props and poles. The ladders are strengthened with the makers' patent bow-spring girder truss which imparts great rigidity and strength to the ladders without materially adding to the weight. The machine can be run and worked by one man if necessary, and is claimed to be the lightest and handiest self-supporting escape extant.

THE Local Government Board has sanctioned the application of the Ashington Council to borrow 2,628*l.* for the Council offices, and 252*l.* for its furnishings.

THE Three Towns Tenants, Ltd., propose to acquire five acres at Ernesettle, St. Budeaux, for a garden city. A scheme for developing the estate has been prepared by Mr. Leigh Fouracre, A.R.I.B.A.

A SCHEME for relaying the drainage system at Berry Wood Asylum, Northants, is under consideration. A report recently prepared by Mr. J. A. Gotch, F.R.I.B.A., and Mr. Tindale, M.Inst.C.E., severely criticising the existing arrangements. The cost will be nearly 2,000*l.*

THE Southampton Town Council have adopted a competitive design (No. 3) for the proposed tea-house on the Common. Detail plans are to be prepared and tenders invited previous to the Local Government Board inquiry into the application for the necessary loan.

THE Mount Park Estate, Bexley Heath, Kent, is being developed on the lines of a garden suburb according to a scheme prepared by Mr. E. Box, architect, Bexley Heath. The estate comprises 92 acres.

Two fine etchings have been given to the Victoria and Albert Museum, one, Mr. D. Y. Cameron's "The Chancel of Amiens," and the other, Mr. Frank Brangwyn's "The Rebuilding of the Victoria and Albert Museum," presented by the artist.

MR. J. T. BLACKWELL, architect, Kettering, has prepared the design for the proposed church of All Saints at Kettering. The entire scheme is estimated to cost 9,000*l.* A start will be made when about half that sum has been collected with the first portion, consisting of nave, north and south aisles, and transepts.

A SERIOUS fire took place on Wednesday morning last at the timber yard of Messrs. Ashworth, Kirk & Co., in the London Road, Nottingham. The yard, which covers some five acres of ground, is one of the largest in the Midlands and adjoins the Midland and Great Northern Railway. The damage is estimated to be about 50,000*l.* The heat was so intense that the railway lines buckled, disorganising the local train service.

THE Association of Midland Local Authorities, at a meeting last week agreed that plans and estimates of cost for the construction of the proposed main road from Birmingham to Wolverhampton, including the "ring" road in Birmingham, be prepared by the city engineer of Birmingham, the borough engineer of Wolverhampton, and the surveyors of Dudley, Coseley, Tipton, Rowley, Oldbury, and Smethwick. The Road Board have offered to contribute 30,000*l.* towards the cost, which is calculated at about 100,000*l.*

THE Bolton Corporation have under consideration a plan prepared by Mr. E. L. Morgan, the borough engineer, for the erection of a block of nine workmen's dwellings at a cost of 100*l.* each. The accommodation downstairs would include a large kitchen 17 ft. 2 in. by 14 ft.; and leading off from there would be a small scullery. Two bedrooms would give a superficial space of 109 ft., and cubical 931 ft., and 100 ft. superficial, 841 cubical respectively. The kitchen floor would be wood block on concrete.

FRIDAY, JANUARY 27, 1911.

HEATHMAN'S PATENT EASY EXTENSION LADDERS

ADJUSTABLE AT ANY HUNG & SEPARATE FIG. 4

FIG. 1A

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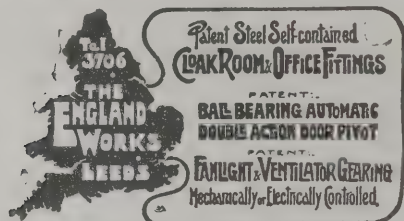
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Church Spire Repairers**Mill Chimneys Raised,
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and Straightened without
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EDINBURGH - 22 PICARDY PLACE.

Works: FALKIRK.

if a bona-fide design or if the particulars are returned within fourteen days of receipt. Mr. Geo. Sutton, town clerk, 10 Hay Lane, Coventry. (For further particulars see advertisement, November 18.)

CUBA.—April 15.—An international competition has been arranged for a Presidential Palace to be erected at Havana at a cost of about 205,000l. Premiums of 10,000 pesos and 1,000 pesos will be awarded. Conditions may be seen at the Cuban Legation, 3 Grosvenor Mansions, Victoria Street, S.W., or the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

DUNFERMLINE.—The Carnegie Trust invite architects to furnish competitive designs for the erection of a Women's Institute. For conditions apply to the Secretary of the Carnegie Dunfermline Trust, Abbot Street, Dunfermline.

HULL.—Feb. 1.—The Guardians of Sculcoates Union invite competitive designs for a suite of offices in Margaret Street, Hull. Premiums of 10l. 10s., 6l. 6s., and 4l. 4s. will be awarded. Mr. J. H. Wild, clerk to the Guardians, 12 Farley Street, Hull.

LEICESTER.—The Corporation invite architects practising in Leicester to supply plans, designs, and estimates for a public hall to be erected adjoining the Victoria Park and Regent Road. Premiums of 100l., 50l., and 25l. will be awarded. Deposit 1l. 1s. Mr. E. G. Mawbey, M.Inst.C.E., Town Hall, Leicester.

LLANDRINDOD WELLS.—The Urban District Council invite competitive plans for a pavilion in the recreation ground. First and second premiums will be awarded by an assessor. Mr. D. C. Davies, clerk, Llandrindod Wells.

MANCHESTER.—March 31.—The Corporation invite designs for a Library and Art Gallery upon the Piccadilly site in the centre of the city. The Preliminary Competition closes March 31. The authors of ten selected designs will compete in the Final Competition. Mr. Reginald Blomfield, A.R.A., will act as assessor, in connection with the city architect. Apply for particulars to Mr. Thomas Hudson, Town Clerk, Town Hall, Manchester. (For further particulars see advertisement, January 6.)

ROMFORD.—The Town Planning and Modern House and Cottage Exhibition at Gidea Park, Squirrels Heath, in the Romford Garden Suburb, summer 1911. Class IV.—Town plan of Gidea Park—prizes of 100l. and 50l. Class VII.—Open to builders. For excellence of workmanship and construction in the erection of a cottage in Class I. or II.—first prize, gold medal and 100l.; second prize, 50l. Final dates for designs; Class IV., March 31, 1911. Mr. Michael Bunney, A.R.I.B.A., hon secretary, 33 Henrietta Street, Strand, W.C.

SOUTHAMPTON.—The Council of Hartley University College invite designs for the proposed new buildings. Mr. E. T. Hare, F.R.I.B.A., will act as assessor. The deposit of 1l. 1s. with the application will be returned if the conditions are returned within fourteen days. Mr. D. Kiddle, registrar, Hartley University College, Southampton.

ST. AUSTELL.—Feb. 25.—The committee invite architects practising in the county of Cornwall to submit designs for a cottage hospital, to be erected on the Trewoon Road. The estimated cost must not exceed 1,500l. Three premiums, viz., 12l. 12s., 8l. 8s., and 5l. 5s., are offered. Apply to Mr. H. Hodge, C.C., Trevarrick, St. Austell, Cornwall.

CONTRACTS OPEN.

ADDINGHAM.—Jan. 31.—For alterations and additions at the High Council School, consisting of excavator's, mason's, bricklayer's, carpenter's and joiner's, slater's, plumber's and glazier's, plasterer's, painter's, and asphalter's work. Mr. T. W. Padgett, divisional clerk, Otley.

ALDERSHOT.—Jan. 31.—For erection of a secondary school, for the Aldershot Urban District Council. Messrs. Kingham & Kingham, architects, Bank House, Grosvenor Road, Aldershot. Send 2l. 2s. deposit to Mr. W. E. Foster, clerk, Municipal Buildings, Aldershot.

ASHTON-UNDER-LYNE.—For the whole of the works in erection and completion of disinfecting station, at the Town's Yard, Wellington Road. Messrs. John Eaton, Sons & Cantrell, architects and surveyors, Stamford Street, Ashton-under-Lyne.

BANBURY.—Feb. 9.—For extension of Banbury Post Office. The Postmaster, Banbury Post Office. Deposit 1l. 1s. H.M. Office of Works, Storey's Gate, London, S.W.

BATH.—Feb. 25.—For the erection of engine-house, suction gas-house, and other appurtenant works, in Midland

Road, Twerton. Deposit 2l. 2s. Mr. W. H. Radford, C.E., Albion Chambers, King Street, Nottingham, and the City Surveyor's Office, Guildhall, Bath.

BELFAST.—Feb. 6.—For erection of a block of buildings at Castle Street and Fountain Street, for Messrs. W. Coates & Son, Limited, electrical engineers. Deposit 2l. 2s. Messrs. Young & Mackenzie, architects, Scottish Provident Buildings, Belfast.

BIRMINGHAM.—Jan. 31.—The Commissioners of H.M. Works and Public Buildings invite tenders, by schedule of prices, for the reinforced concrete work at the telegraph stores building (block C), Bordesley. Deposit 1l. 1s. The Controller, Telegraph Stores, Fordrough Lane, Birmingham, or Mr. E. Cropper, architect, 22 Carlisle Place, Westminster, London, S.W.

BIRKENHEAD.—Feb. 21.—For addition of a storey to the main block, Union Workhouse, Church Road, Tranmere. Deposit 5l. 5s. Messrs. Edmund Kirby & Sons, architects, 5 Cook Street, Liverpool.

BISHOPSTAWTON.—Feb. 3.—For carrying out repairs to the Vicarage and Glebe Cottages at Bishopstawton, Devon. Messrs. Harding, Son & Rootham, solicitors, Barnstaple.

BOLTON-UPON-DEARNE.—Feb. 13.—For erection of forty-eight dwelling houses at Highgate, for the Bolton-upon-Deane Urban District Council. Deposit 2l. 2s. Mr. J. W. Wilson, surveyor, Council Offices, Station Road, Bolton-upon-Deane, Yorks.

BRIGHTON.—Feb. 7.—For alterations, &c., to an office at the Parochial Offices, Prince's Street. Mr. B. Burfield, clerk, Parochial Offices, Prince's Street, Brighton.

BROADWAY.—Jan. 31.—For erection of two cottages at Broadway, Worcestershire, for the Great Western Railway Company. The Engineer, Gloucester Station.

BRUMBY.—Feb. 6.—For erection of a pair of cottages at Brumby, Yorks. Deposit 2l. 2s. Mr. John Potts, 54 Fox Street, Scunthorpe, or Messrs. Hastie, 65 Lincoln's Inn Fields, London, W.C.

CAMBRIDGE.—Feb. 4.—For erection of two public conveniences, one on Butt's Green, Midsummer Common, and the other on Petersfield. The Borough Surveyor, Guildhall, Cambridge.

CASTLEFORD.—For erection of block of offices, &c., for the Glass Houghton & Castleford Collieries, Limited. Messrs. Garside & Pennington, architects and surveyors, Ropergate, Pontefract, Central Chambers, Castleford.

CATERHAM.—Feb. 15.—The Metropolitan Asylums Board invite separate tenders for the following works at Caterham Asylum, Caterham, Surrey:—(1) Alterations and additions and forming new pump-room, &c.; (2) installation of a vertical steam engine and horizontal steam service pump and piping connections. Deposit 1l. each contract. Mr. W. T. Hatch, M.I.C.E., M.I.M.E., engineer-in-chief, the Office of the Board, Embankment, London, E.C.

CUDWORTH.—Feb. 9.—The West Riding education committee invite whole or separate tenders for the following works at Snydale Road Council school, Cudworth, viz.:—Drainage and conversion of offices (builder and plumber). The Education Architect, County Hall, Wakefield. Send 1l. deposit to the West Riding Treasurer, County Hall, Wakefield.

CUMBERLAND.—For the whole of the work required in erection of new cloak-rooms, &c., at St. Bees and Irthington Council Schools, for the Cumberland Education Committee. Clerk of Works, Mr. J. Forster, 13 Earl Street, Carlisle.

DARLINGTON.—Jan. 30.—For erection of an elementary school in Reid Street. Deposit 2l. 2s. Mr. George Winter, borough surveyor, Town Hall, Darlington.

EAST ARDSLEY.—Jan. 31.—For erection of sliding partition in East Ardsley school, Yorks. Mr. A. Angus, W.R. Education Office, Wakefield.

FYFIELD.—Feb. 20.—For the extension and alterations of the industrial and truants' school, Fyfield, near Ongar, Essex, for the West Ham education committee. Send names and 5l. deposit by Jan. 28, to Mr. William Jacques, A.R.I.B.A., architect to the education committee, 2 Fen Court, Fenchurch Street, E.C.

GOMERSAL.—Feb. 9.—The West Riding Education Committee invite whole or separate tenders for the following works at Gomersal New School, viz.:—Builder, joiner, slater, plumber, plasterer, painter, smith and iron founder, and heating engineer. Education Architect, County Hall, Wakefield, and the Divisional Clerk, Heckmondwike. Send 1l. deposit to the West Riding Treasurer, County Hall, Wakefield.

GRAVESEND.—Feb. 13.—For the construction of an open-air swimming bath in the Gordon Recreation Ground; also for the construction of water-supply drains, &c. Deposit 1*l*. The Borough Surveyor's Office, Gravesend.

HARWICH.—Jan. 30.—For alterations and additions to several elementary schools in the borough. Mr. G. D. Hughes-Jones, secretary, Church Street, Harwich.

HEREFORD.—Feb. 8.—For the erection of a secondary school in Widemarsh Street, Hereford, to accommodate 150 boys, together with the laying out of playground and boundary fence, &c. The County Surveyor, Shire Hall, Hereford.

HUDDERSFIELD.—Jan. 30.—For erection of a urinal at Waterloo. Mr. K. F. Campbell, M.I.C.E., borough engineer and surveyor, 1 Peel Street, Huddersfield.

ILKLEY.—Feb. 6.—For erection of country residence, Ilkley. Mr. W. H. Herbert Marten, A.R.I.B.A., 3 Cookridge Street, Leeds.

IRELAND.—Feb. 6.—For erection of a store at their Longford Station, for the Midland Great Western Railway of Ireland Co. Charge 5*s*. The Chief Engineer, Broadstone Station, Dublin.

IRELAND.—Feb. 9.—For erection of one block of four dwellings, with store, office, ladder shed, ashpit, and fencing, at Glencolumbkille, County Donegal, and one for similar house at Valencia Island Lighthouse, County Kerry, for the Commissioners of Irish Lights. The Harbour Engineer's Office, Londonderry; Harbour Engineer's Office, Belfast; Harbour Commissioners' Office, Galway, and Mr. Hubert G. Cook, secretary, Irish Lights Office, Carlisle Buildings, Dublin.

ISLE OF WIGHT.—Feb. 7.—For erection of the pumping station buildings, &c., at Home Meadow, Chillerton. Mr. John Marsh, clerk, Council Chambers, Shanklin.

KEIGHLEY.—Jan. 28.—For the various works (except joiner's and painter's), for two pairs of semi-detached houses at Morton Banks. Send names by Jan. 28 to Messrs. John Haggas & Sons, North Street, Keighley.

LEEDS.—Feb. 2.—For erection of a weigh-bridge office at the sewage works at Knostrop, Leeds. Deposit 1*l*. 1*s*. Mr. G. A. Hart, sewerage engineer, Great George Street, Leeds.

LEEDS.—For proposed extension of the textile buildings at the University. Apply in writing, stating whether all or separate trades, to Mr. Paul Waterhouse, architect, Staple Inn Buildings, High Holborn, London, W.C.

LEEDS.—Jan. 28.—For all trades required in the erection of villa, Pool Bank, New Road. Send names by Jan. 28 to Mr. Arthur Winch, architect, 23 Park Row, Leeds.

LIVERPOOL.—Jan. 31.—For the enlargement of Liverpool (Wavertree) Sorting Office. Deposit 1*l*. 1*s*. Mr. W. Gilruth, H.M. Office of Works, Head Post Office, Liverpool, or H.M. Office of Works, Storey's Gate, London, S.W.

LONDON.—Feb. 2.—For the extension of the South-Eastern District Post Office. Mr. J. Rutherford, 22 Carlisle Place, London, S.W. Send 1*l*. 1*s*. deposit to H.M. Office of Works, Storey's Gate, London, S.W.

LONDON.—Feb. 2.—For the following works, for the Guardians of St. George-in-the-East:—(1) Repairs and painting at the Relief Office and Dispensary, 28 Cannon Street Road, E.; (2) reconstructing certain staircases at the Plashet Schools, Green Street, Upton Park, E. Mr. T. W. Aldwinckle, F.R.I.B.A., 20 Denman Street, London Bridge, S.E.

LONDON.—Feb. 9.—The Southwark Guardians are desirous of receiving tenders for the rebuilding of the upper part of the chimney shaft at their Infirmary, East Dulwich Grove, S.E. Deposit 2*l*. 2*s*. Mr. A. W. Tribe, architect, 120 Clapham Road, S.W.

LONDON.—Feb. 14.—For the construction of underground sanitary conveniences, at Buckhold Road, Garratt Lane, Wandsworth. Deposit 1*l*. 1*s*. The Borough Engineer and Surveyor's Office, 215 Balham High Road, S.W.

MANCHESTER.—Feb. 4.—For the erection of a medical superintendent's house at Baguley Sanatorium. The City Architect, Town Hall. Send 1*l*. 1*s*. deposit to the City Treasurer.

MELTHAM (HUDDERSFIELD).—Feb. 6.—For erection of a boiler-house and for the heating by hot water heating apparatus of the typhoid fever block, at the Colne and Holme Joint Isolation Hospital. Mr. Joseph Berry, architect, Market Place, Huddersfield.

OLD SODBURY.—Feb. 1.—For carrying out alterations and enlargement of Old Sodbury school (Glos). Mr. W. C. Willcox, Old Sodbury House, near Chipping Sodbury.

PAISLEY.—Feb. 7.—For extension and alterations Paisley Head Post Office. The Postmaster, Paisley Head Post Office. Send 1*l*. 1*s*. deposit to H.M. Office of Works, 3 Parliament Square, Edinburgh.

PONTEFRAC.—Feb. 1.—For the various trades in erection and completion of schools for 750 pupils, at Love Lane. Send names by Feb. 1. to Messrs. Tennant & Collins, architects and surveyors, Pontefract.

ROCHDALE.—Feb. 7.—For the various works in connection with the alteration of the Departmental Offices in the Town Hall, viz.:—General contractors' work; oak screens, linings, casings, counters, and fittings; and painters' work. The Borough Surveyor's Office, Town Hall, Rochdale.

ROCHE.—Jan. 31.—For erection of a cottage at Rock Station, Cornwall, for the Great Western Railway Company. The Engineer, at Plymouth, North Road Station.

ROTHBURY.—Feb. 2.—For the separate trades in sundry alterations and additions to the premises lately known as the Sun Inn, Front Street, Rothbury, Northumberland. Mr. C. Reavell, jun., A.R.I.B.A., architect and surveyor, Morpet and Alnwick.

SCOTLAND.—Feb. 6.—For the mason, carpenter, slater and cement works of the following cottages, viz.:—Paris of Tarves, for the Haddo House Estates (Aberdeen) (1) Nethermill, single cottage; (2) Smiddyhill, single cottage (3) Moss Side, single cottage; (4) Oldtown of Fochel, single cottage. Parish of Methlick: (5) Newton, double cottage (6) Balquhindachy, double cottage. Parish of New Deer (7) Mains of Drum, single cottage. The Estate Office Aberdeen.

SHEFFIELD.—Jan. 31.—For erection of tramway passenger shelters at the following points, viz.:—(1) Front of Cutlers' Hall; (2) Moorhead; (3) The Wicker; (4) Hunter's Bar. The City Architect, Town Hall, Sheffield.

SHERBORNE.—Feb. 9.—For the erection of an elementary school. The County Surveyor's Department, County Offices Dorchester, and Messrs. Fletcher, Son & Brett, Wimborne.

SOUTHAMPTON.—Feb. 15.—For erection of two additional Pavilion blocks, extension of nurses' home, and other works at the Shirley Warren Infirmary. Send names and 1*l*. 1*s*. deposit by Jan. 30 to Mr. A. F. Gutteridge, architect, 9 Port land Street, Southampton.

SOUTHAMPTON.—Feb. 9.—For small additions to the Pavilion, Royal Pier. Deposit 1*l*. 1*s*. Mr. E. Cooper Poole A.M.I.C.E., engineer and surveyor to the Board, Harbour Offices, Town Quay, Southampton.

SOUTHGATE.—Jan. 31.—For erection of an iron shed at the Council Depot, Palmer's Green. Mr. C. G. Lawson, surveyor, Council Offices, Palmer's Green, N.

STOCKPORT.—Feb. 6.—For the labour and materials required in (a) boarding the roof over a swimming bath, and (b) alterations to sanitary accommodation, &c., at St. Petersgate Baths. Mr. John Atkinson, A.M.I.C.E., borough surveyor, Town Hall, Stockport.

TANTOBIE.—Jan. 28.—For erection of warehouses, hall, and stables, at Tantobie, Durham, for the Tantobie Co-operative Society, Limited. Apply by Jan. 28 to the architect, Mr. L. G. Elkins, Co-operative Wholesale Society, West Blandford Street, Newcastle-upon-Tyne.

WALES.—For erection of buildings and foundations in connection with the new gasworks at Llanwrtyd Wells, Brecon, and a similar gasworks at Kidwelly, Carmarthen. Mr. D. Rees Edmunds, solicitor, 9 Hall Street, Llanelli.

WALES.—Jan. 30.—For alteration of their branch premises at Aberfan, for the Troedyrhiw and District Co-operative Industrial Society. Deposit 1*l*. Mr. J. Evans, secretary, at Troedyrhiw Stores.

WALES.—Jan. 31.—For erection of a new infants' room, &c., in connection with Splott Road Wesleyan Methodist Church, Cardiff. Messrs. Habershon, Fawckner & Co., architects, 14 High Street, Cardiff.

WALES.—Jan. 31.—For erection of chapel and school-rooms, for the Trustees of Ebenezer C.M. Church, Maerdy. Deposit 2*l*. 2*s*. Mr. R. S. Griffiths, M.S.A., architect and surveyor, Tonypany. Mr. John Jones, secretary, 46 Oxford Street, Maerdy.

WALES.—Feb. 1.—For erection of the Rhydybont Congregational Chapel, Llanybyther, Carmarthenshire. Mr. W. Beddoe Rees, architect, 3 Dumfries Place, Cardiff.

WALES.—Feb. 4.—For the following works, for the Glamorgan County Council, viz.:—(1) New boys' Council School, at Tonyrefail; (2) alterations and additions to the infants' department of the Council School at Alltwen, near Pontardawe. The County Council Offices, Westgate Street, Cardiff.

WALES.—Feb. 6.—For erection of an infants' school at Lower Pentrebach, Merthyr Tydfil, for the education com-

uttee. Deposit 2*l*. 2*s*. Deputy Surveyor, Town Hall, ferthyr Tydfil.

WALES.—Feb. 6.—For the erection of 97 houses in Risca, Ion., for the Risca Urban District Council. Plot "A," 30 ouses; plot "B," 34 houses; plot "C," 33 houses. Deposit 1*l*. 2*s*. Mr. A. J. Dardis, surveyor, Council Offices, Risca, Ion.

WALES.—Feb. 7.—For erection of eighteen semi-detached illas at Treforest. Messrs. Gibson, Parry Williams & Co., rchitects and surveyors, Capital and Counties Bank Cham- ers, Pontypridd.

WALSALL.—Feb. 7.—For the work required in the altera- tions and additions to the electrical generating station in Volverhampton Street. Deposit 1*l*. 1*s*. The Borough Elec- trical Engineer, Council House, Walsall.

WATFORD.—Feb. 8.—For the erection and completion of Domestic Economy Centre at Grosvenor Road. Deposit 1*l*. 2*s*. Mr. Urban A. Smith, county surveyor, Hatfield.

WOKING.—Feb. 22.—For the construction of an under- ground sanitary convenience near to the Victoria Arch, Woking Station. Deposit 1*l*. 1*s*. Mr. G. J. Wooldridge, rveyor, Council Chambers, Woking.

STRATFORD-ON-AVON.—Feb. 14.—For additions and iterations to the hospital. Send names and 2*l*. 2*s*. deposit y Jan. 31 to Mr. William Henman, F.R.I.B.A., 19 Temple treet, Birmingham.

TENDERS.

BASINGSTOKE.

For the erection of a dust destructor for the Corporation.

HARRIS (accepted) £625 0 0

BEDDINGTON.

For erecting a small bacteriological laboratory at the Isola- tion Hospital, Beddington Corner. Messrs. CHART, SONS & READING, architects and surveyors, Croydon.

Sayers £265 0 0
Truett & Steel 249 0 0
Waller 239 0 0
Hazell 237 0 0
Bacon & Son 229 0 0
Stewart & Sons 222 0 0
BARKER & SONS, LTD., Croydon (accepted) 208 0 0

BLACK NOTLEY.

For erection of a hospital at Black Notley, Essex, for the Braintree Joint Hospital Board. Mr. E. H. BRIGHT, Braintree, surveyor.

Sherling £598 10 0
Brown & Son 470 0 0
Trudgett 460 0 0
Levelock 439 0 0
SHARP, Halstead (accepted) 377 0 0

LEEDS.

For the extension of the Corporation storage reservoir at Bramley.

Holme & King (recommended) £17,136 0 0

LONDON.

For supply of steel flooring at the Limehouse Station in connection with the electricity undertaking, for the Stepney Borough Council.

Strachan & Henshaw £1,538 0 0
Redpath, Brown & Co. 890 0 0
Blake Boiler, Wagon and Engineering Co. 868 0 0
General Iron Foundry Co. 823 0 0
Babcock & Wilcox 810 0 0
E. Danks & Co. (Oldbury), Ltd. 750 0 0
Wood & Co., 81 Canning Street, E.C. (recommended) 718 0 0

For the provision of electric motors and a 25-kw. motor generator required at No. 23 Belvedere Road, for the L.C.C.

Dick, Kerr & Co. £788 0 0
Electric Construction Co. 741 10 0
British Thomson-Houston Co. 602 12 6
Lancashire Dynamo Co., Manchester (re- commended) 581 10 0
Estimate of the chief officer of tramways 600 0 0

LONDON—continued.

For the erection of a bandstand at Ruskin Park, for the L.C.C.

	(A)	(B)
Pike	£569 0 0	519 0 0
Harding & Son	524 0 0	474 0 0
Lowe & Co.	487 0 0	457 0 0
Jackson	470 13 0	453 17 0
F. & G. Foster	467 0 0	444 0 0
J. & C. Bowyer	467 0 0	432 0 0
Bickerton	425 0 0	410 0 0

Barker & Co., Kensington High Street (recommended) 385 0 0 360 0 0

Architect's estimate for the erection of the bandstand, with exposed woodwork in oak, 452*l*.

(A) with exposed woodwork in oak; (B) painted pitch pine.

MIDDLESBROUGH.

For the construction of auxiliary buildings to the transporter bridge.

Arrol & Sons, Glasgow (recommended) . . . £1,750 0 0

OSWESTRY.

For the erection of a secondary school for girls for the Shropshire Education Committee.

HUXLEY, Malpas (accepted) £6,528 0 0

PITSEA.

For erection of Council School, Pitsea, Essex. Mr. F. WHITMORE, architect, Chelmsford.

Milton Bros.	£4,121 8 11
Woollaston & Co.	3,995 0 0
Gayford	3,955 0 0
Tong	3,911 0 0
Kidman Bros.	3,909 0 0
Dowsing & Davis	3,865 0 0
Nightingale	3,844 0 0
Paul	3,838 0 0
Whiter & Co.	3,833 0 0
J. & M. Patrick	3,808 0 0
Vail & Shore	3,792 10 6
E. & B. H. Davey	3,780 0 0
F. & E. Davey	3,683 0 0
Pavitt & Sons	3,670 11 7
Willmott	3,637 0 0
Brown	3,630 1 6
Jarvis	3,612 0 0
Strong & Son	3,608 19 0
Potter & Son	3,583 2 6
Burtwell	3,547 0 0
Bailey	3,547 0 0
Fryd	3,537 0 0
Hammond & Son	3,491 0 0
Brown Bros., Grays (recommended)	3,422 2 0
Architect's estimate	3,589 0 0

PONTYPRIDD.

For the construction of roads and surface water drains on the Lewistown Estate, Treforest, Pontypridd. Messrs. A. O. EVANS, WILLIAMS & EVANS, Pontypridd, archi- tects.

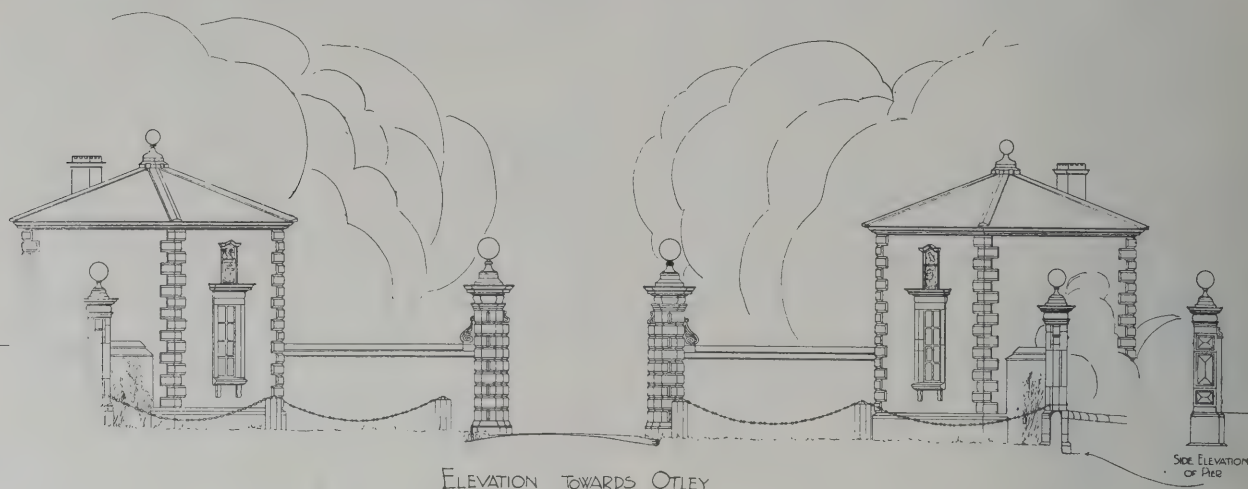
Davies	£1,475 13 0
Walker	1,363 3 5
Mackay & Davies	1,329 0 11
Guys	1,273 2 4
Morgan	1,267 2 6
Hames	1,234 13 6
Jones	1,228 19 4
Barnes, Chaplin & Co.	1,217 15 0
Smith, Jones & Sons	1,200 0 0
Sutherland	1,170 13 0
G. Collins	1,154 1 1
Murray	1,150 0 0
WEBB & SONS, Abercynon (accepted)	1,066 17 4

WINLATON.

For levelling, paving, metalling, &c., eleven streets, for the Blaydon Urban District Council. Mr. GEORGE SYMON, surveyor.

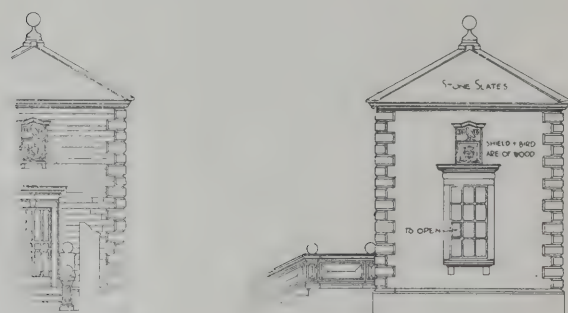
Rule, Hadfield & Co.	£2,240 6 0
Davison	2,056 14 10
Tench	2,030 8 10
Dorin	2,021 3 2
Friend & Co.	1,946 8 6
Robson	1,725 13 3
Armstrong	1,623 19 5
Hope & Bunch	1,555 17 0
HENDERSON, Gosforth (accepted)	1,339 2 9
Surveyor's estimate	1,494 12 7

"THE ARCHITECT" STUDENTS' SKETCHING AND MEASURING CLUB.



ELEVATION TOWARDS OTLEY

SIDE ELEVATION OF PIER

Entrance
Farnley Park: near Otley

10 5 0 5 10 15 20 25 30
SCALE OF FEET.

WARDS ROAD

MEASD AND DRAWN
BY J. HARRIS

SHERINGHAM.

For making up private streets. Mr. F. HALL SMITH, surveyor to the Council.

	Priory Road.	Montagu Road.
Road Maintenance Co., Ltd. . .	£493 0 0	£632 0 0
Howes, Norwich (accepted) . .	397 0 0	506 0 0

For the erection of Council offices. Messrs. STANLEY, SIMONS & Co., architects, Sheringham.

Neale	£1,800 0 0
Bullen	1,682 0 0
Weston	1,675 0 0
Porter	1,657 5 0
Kidman Bros.	1,650 0 0
Chapman	1,597 0 0
Podd & Fisher	1,540 0 0
Anderson & Son	1,526 0 0
Blyth & Son	1,327 0 0

STANWAY.

For erecting elementary school at Stanway, Essex, for the Lexden and Winstree District Committee, for the accommodation of 260 children, and self-contained assembly hall. Mr. J. W. START, F.S.I., architect, Colchester.

Quantities by Mr. J. B. H. Low, Chelmsford.

	Schools.	Playsheds.
Gladwell	£3,738 0 0	£260 0 0
Kenny	3,725 0 0	220 0 0
Chambers	3,697 0 0	237 0 0
Bennell	3,675 0 0	220 0 0
Gayford	3,648 0 0	215 0 0
Ward	3,610 0 0	215 0 0
Paul	3,579 0 0	207 0 0
Dobson & Son	3,492 0 0	230 0 0
Theobald	3,475 0 0	250 0 0
Everett & Son	3,450 0 0	220 0 0
Smith	3,426 0 0	205 0 0
Smith & Son	3,426 0 0	215 0 0
Mason & Son	3,400 0 0	180 0 0
Parkington & Son	3,300 0 0	200 0 0
Beaumont	3,299 0 0	212 10 0
Saunders	3,244 0 0	198 0 0
C. DEAVES, Bures (accepted)	3,196 0 0	198 0 0

ENTRANCE, FARNLEY PARK, NEAR OTLEY.

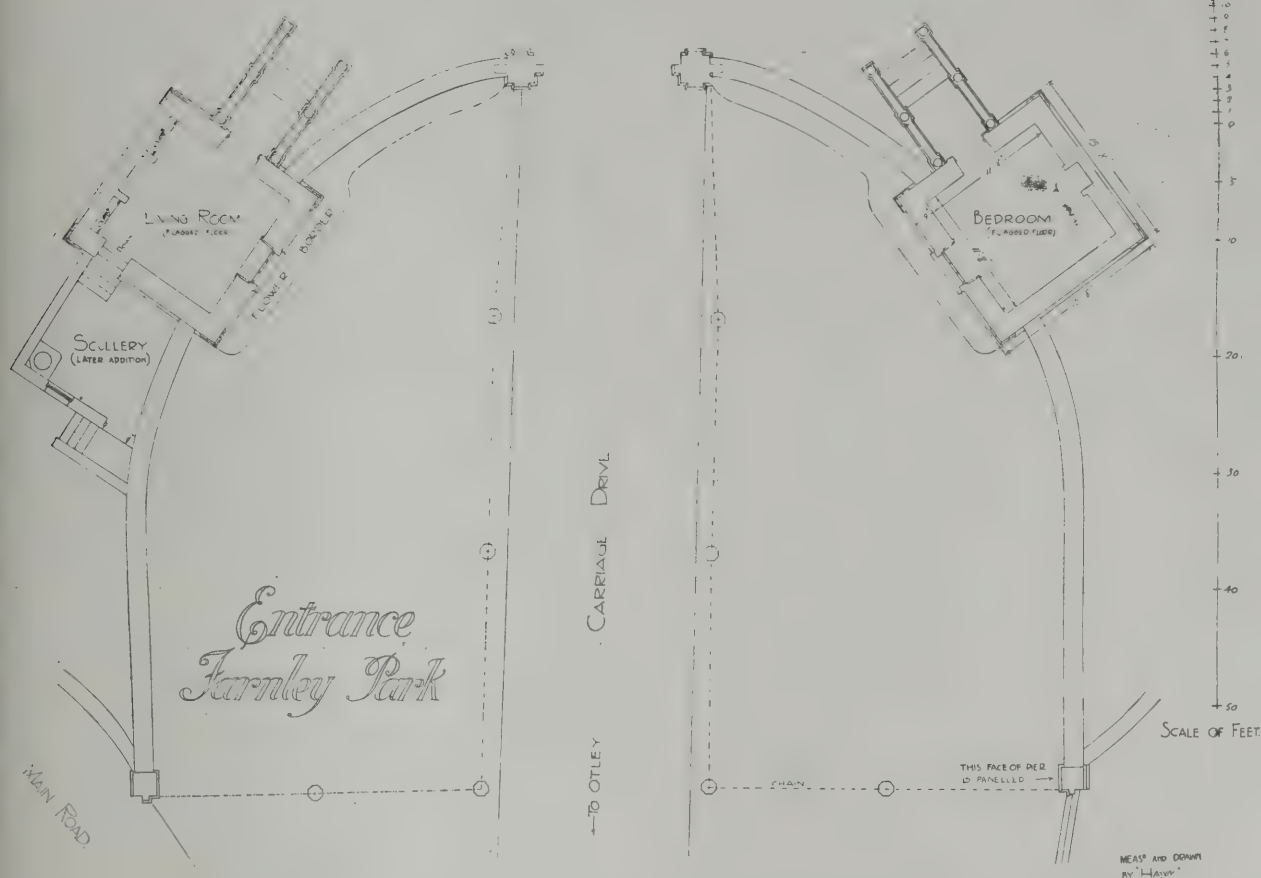
THIS is one of the entrances to Farnley Park, and so forms one of the approaches to Farnley Hall, a beautiful house of the Elizabethan period, which has been added to in later times.

The entrance consists of lodges, boundary wall, and gate piers. There is an iron gate between the main piers, but as it is of recent date and not of very good design it has not been shown on the drawings. The whole, as shown, is of local sandstone, the quoins and dressings generally being tooled, and the walling being of punched stone. Both lodges are treated alike, and over the doors and windows we find a panel containing a coat of arms, a figure of a hawk—the crest of the Fawkes family, in whose possession the estate is—and the date. The coat of arms and the hawk, on inspection, prove to be wood. The date—in stone—is 1618. Local stone slates have been used in roofing, in conjunction with stone ridging on hips—the whole being surmounted by a stone finial. The chimney in each case seems to be of later date than the rest, and the scullery (shown on plan) is also quite modern, and is kept low so that it does not show above the boundary wall. Internally, there is very little of interest. The rooms are each 10 feet 6 inches high, with plain walls and ceilings, and have flagged floors. The fire range in the living room is not the original one, but at the back of the fire, in a good state of preservation, is an iron plate with traces of a very refined ornament, somewhat of an Adams type. The bedroom fireplace has also an Adams feeling about it.

THE fourth abstract of Foreign Labour Statistics, issued by the Board of Trade, includes a table giving the percentages of total occupied population for the principal groups of occupations in seven foreign countries and in the United Kingdom. The figures relating to "Building and Works of Construction" are as follows:—France, 4.20; Germany, 6.99; Austria, 2.96; Hungary, 1.48; Italy, 5.02; Belgium, 7.28; United States, 4.43; and the United Kingdom, 6.77.

"THE ARCHITECT" STUDENTS' SKETCHING AND MEASURING CLUB.

FARNLEY PARK



THE INSTITUTION OF CIVIL ENGINEERS.

At an ordinary meeting of the above Society, Mr. Alexander Siemens, president, in the chair, the papers read were "The Strengthening of the Roof of New Street Station, Birmingham," and "The Reconstruction and Widening of Arpley Bridge, Warrington," by Wm. Dawson, M.Inst.C.E. The following are abstracts of these papers:—

The roof of New Street Station, erected in 1852-3, is the prototype of the one formerly existing over Charing Cross Station, and is of the bowstring girder type, of 212 feet span. Having regard to the results of the Board of Trade inquiry into the failure of one of the tie-rods of Charing Cross roof, it was deemed advisable, as a precautionary measure, to fix auxiliary tie-bars to the principals, especially as they were of somewhat lighter construction than accorded with modern practice. The tensile stress in the main tie-rod due to dead load, painters' scaffolding, and a horizontal wind-pressure of 40 lbs. per square foot was 6.93 tons per square inch, whilst the corresponding stress in the arched rib was 3.07 tons per square inch, and it was therefore considered that the former alone need be strengthened. Auxiliary tie-bars were accordingly fixed to each principal, by means of scaffolding suspended directly from the arched ribs of the principals by wire ropes, so as to avoid all interference with the traffic on the lines or platforms below. This scaffolding was moved forward from principal to principal as the work proceeded, without being lowered to the platforms. In order to avoid placing additional stress on the existing tie-rods owing to the weight of the scaffolding, temporary steel hawsers were secured to the feet of the principals and stressed to an amount which counteracted the effect on the tie-rod of the weight of the scaffolding. The auxiliary tie-bars were formed of two 6-inch by 3-inch steel bars placed on edge, and in order that a certain definite amount of relief might be given to the existing tie-rods an initial stress was put in the auxiliary tie-bars and accurately measured by means of calibrated springs. While this work was in progress the principal was lifted and suspended clear of its bearings by means of a derrick, so that the full tensile stress might be developed in the tie-bars, and not be partly absorbed in tending to draw over the head of the column on which the principal rested. The new tie-bars were secured to the existing principals by means of 2½-inch diameter pins, which passed through the shoe of the roof principals.

The London and North-Western Railway Company's line, over which the heavy traffic passes between Liverpool, Garston, and the Manchester and Yorkshire districts, crosses the river Mersey at Warrington by a girder bridge of 180 feet span, erected in 1853 from designs by the late Mr. John Lister.

The bridge formerly consisted of three main girders with a suspended timber floor to which the permanent way was directly attached, and as the working of the goods traffic necessitated the use of a heavier class of engine than had hitherto been employed, it became necessary to strengthen the bridge and at the same time to widen it, so as to provide the clearance between the girders required by the minimum construction gauge.

Various schemes for this purpose were considered, bearing in mind the necessity of maintaining the railway traffic across the bridge and avoiding interference with navigation below. It was ultimately decided to substitute new girders for the existing face girders, and by means of overhead girders connected with the top booms of the new girders to transfer to the latter a portion of the load that would otherwise be carried by the centre girder, which was already overloaded. A new steel floor was also to be provided.

The method of carrying out the work at site is perhaps the most interesting feature. This was accomplished by first closing one of the lines over the bridge and erecting the new face girder on the existing floor, all traffic being meanwhile worked over the other line.

After the first girder had been completed, the portion of the floor on which it was built was cut away, and the old face girder was removed in the following manner: One end was placed upon a trolley, and barges, on which a suitable stage had been built, were floated underneath the other end at low water. The rising tide lifted this end off its bearings, and it was then pulled on to the opposite abutment by a locomotive running on the ordinary line of rails.

The new face girder was next placed in its final position, and the first half of the new steel floor was fixed, after which the permanent way was restored and all traffic was diverted over the strengthened portion of the bridge. The other half of the bridge was dealt with similarly. When this work had been completed steps were taken to relieve the old centre girder permanently of such an amount of load as would ensure that under no conditions of traffic would the stress in the bottom flange exceed 5 tons per square inch.

INCORPORATED SOCIETY FOR PROMOTING THE ENLARGEMENT, BUILDING, AND REPAIRING OF CHURCHES AND CHAPELS.

THIS Society held its usual monthly meeting on the 19th inst. at the Society's House, 7 Dean's Yard, Westminster Abbey, S.W., the Rev. Canon C. F. Norman in the chair.

Grants of money were made in aid of the following objects, viz.:—Building new churches at Forest Town, Notts, 80l.; Higham Hill, St. Andrew, Walthamstow, Essex, 150l. for the first portion; Langley Mill, St. Andrew, Derbyshire, 90l.; Hanley, All Saints', Staffs, 200l.; and Sneinton, St. Christopher, near Nottingham, 100l.; rebuilding the churches at Blackrod, St. Katharine, Lancs, 80l.; and Rochdale, St. Mary, Lancs, 150l.; and towards enlarging or otherwise improving the accommodation in the churches at Camberwell, St. Bartholomew, Surrey, 40l.; Chobham, Holy Trinity, Surrey, 5l.; Kingston Hill, St. Paul, Surrey, 50l.; Letchworth, Herts, 15l.; Pirton, St. Mary, Herts, 25l.; Somersham, St. John the Baptist, Hunts, 20l.; Ilkeston, St. John the Evangelist, Derbyshire, 70l.; Ilkeston, St. Mary, Derbyshire, 70l.; and Llanddewi, St. David's, Denbigh, 20l. A grant of 25l. was also made from the special Mission Buildings Fund towards building a mission church at Sandwith, St. Bega, Cumberland. The following grants were also paid for works completed:—Pendleton, St. Ambrose, near Manchester, 130l.; Ewood, St. Bartholomew, near Blackburn, 100l.; Whiston, St. Mildred, Staffs, 35l.; and Penrhiwceiber, St. Winifred, Glam., 30l. In addition to this the sum of 396l. was paid towards the repairs of 21 churches from trust funds held by the Society.

The appointment of Mr. Walter Tapper, A.R.I.B.A., as a member of the Committee of Honorary Consulting Architects of the Society was confirmed at this meeting.

LONDON MASTER BUILDERS' ASSOCIATION.

The usual monthly meeting of the Council was held at Koh-i-Noor House, Kingsway, W.C., on Thursday, the 19th instant, under the chairmanship of Mr. Leonard Horner (President). Deep regret was expressed at the death of the late Mr. John Howard Colls, Past President of this Association, and a prominent supporter of all the building trade organisations. Sincere sympathy was felt for the members of his family. Mr. William Shepherd was elected a trustee for the reserve fund, in place of Mr. Colls. It was decided to hold the annual dinner at the Whitehall Rooms, Hotel Metropole, on Thursday, February 23 next, and the annual general meeting at Koh-i-Noor House on Monday, February 27. The draft of the annual report was submitted, amended, and approved.

OPENINGS IN JAPAN.

THE British Acting Commercial Attaché at Yokohama (Mr. R. Boulter) has furnished particulars of the Japanese Budget for 1911-12, from which the following items are extracted, in the *Board of Trade Journal*:—

Railway Special Account:—Extension works, 2,340,000l.; improvement works, 2,840,000l.

Department of Agriculture and Commerce:—Extension of Wakamatsu iron and steel works, 180,000l.

Department of Finance:—Construction of new parliamentary buildings, 40,000l.; construction of customs piers at Kobe, 20,000l.

War Department:—Reconstruction of military schools and other institutions, 52,000l.

Home Office:—Improvement of Shimonoseki Straits, 50,000l.; construction of explosives warehouse, 25,000l.; river improvement, 75,000l. (an additional expenditure of 500,000l. on this work is stated to be probable, to be defrayed out of existing funds).

Department of Justice:—Construction of four new law courts, about 50,000l.

A HIGHER elementary school is to be provided for 150 scholars in the Clay Cross district by the Derby County Education Committee.

THE Goole Urban Council last week adopted the plans and estimates prepared by Mr. Midgley Taylor, civil engineer, of a new sewerage scheme, which is estimated to cost 35,000l. The work will be carried out in sections.

DIARIES, REFERENCE BOOKS, AND YEAR BOOKS.

The Practical Electrician's Pocket Book (London: S. Rentell & Co., Ltd.) has again been thoroughly revised and enlarged for 1911, the duty of checking each section being, as usual, relegated to an expert in the particular branch of the subject to which that section refers. There are several improvements on last year's thirteenth edition. The particulars of central stations now include the names of the resident engineers-in-charge. The winding and repair of armatures is exhaustively treated in a practically written section. The chapters on arc lamps and telephones have also been revised. The diagrams throughout the book are excellent. Finally, there are Lundbergs' latest switch wiring diagrams to solve many an apparently difficult wiring problem. The very compact Pocket Book and Diary for 1911 caters more than ever before for the requirements of the electrical fraternity in general.

Messrs. Pinchin, Johnson & Co., Ltd., have issued an exceptionally neat combined diary and notebook under the title of the "Minerva." Its appearance may fairly be described as handsome, and it is at the same time essentially a practical pocket diary. The only possible criticism would seem to lie in the slip-on rubber band, which would be liable to get lost. The Diary includes some useful information concerning the firm's varnishes, colours, paints, and other productions. A copy of this compact Diary may be obtained by any bona-fide architect, builder, or decorator, who sends his card.

The Wouldham Cement Co., Ltd., have again printed their Gargantuan hanging calendar, with its bold 9-inch numerals, which might be read at the far end of a good-sized office.

The *Ironmonger Diary* makes a volume of more than 600 pages. The diary portion is interleaved with blotting-paper, and gives three days to each page. It is preceded by fifty pages of literary matter of trade interest.

IRON: ITS WORKER AND A PORTION OF HIS WORK.*

(Continued from last week.)

HAVING dealt with the metal let us now turn to its worker.

We have seen that his early connection with iron was mainly in the manufacture of arms, and, in consequence of his close connection with the implements of war and the making of tools, the smith plays an important part in the world's history. Indeed, his trade has never been looked upon as an ignoble one, and his industrial position has always ranked high.

In Anglo-Saxon times "the smith a mighty man was he" in more than one sense. He made and mended weapons used in the chase and in war; he forged the coats of mail and the cuirasses of the chiefs, and welded their swords. We read that his person was protected by a "double penalty." He was treated as an officer of the highest rank and awarded first place in precedence. He sat at table with the King and Queen, next to the domestic chaplain, and even in that early day there seems to have been a hot spark in his throat which needed quenching, for he was "entitled to a draught of every kind of liquor that was brought into the hall."

William the Conqueror owed to the smith no small share of his victory at Hastings. We read of Henry de Ferrars, one of the officers supervising William's farriery, being created an Earl, and the coat of arms of his descendants contained six horseshoes indicative of their origin.

In the latter part of the Middle Ages our friend's work became more varied. He was "the rivet that held Society together." Nothing could be done without him. For building, trade and husbandry his aid was sought. In remote parts we find him combining the duties of farrier, tool maker, agricultural implement maker, veterinary surgeon, dentist, and sometimes those of parish clerk.

Shakespeare, in "King John," intimates that he was the recipient of news and the news-monger of the time:—

I saw a smith, holding his hammer thus,
The whilst his iron did on the anvil cool,
With open mouth, swallowing a tailor's news.

Mention of the smith as parish clerk carries the mind to more modern times and reminds us of the famous smith of Gretna Green, to whom eloping couples repaired to be married. The ceremonies were carried out by the side of the anvil, and what could be more fittingly symbolical of the welding of two lives into one?

* Read before the members of the Incorporated Clerks of Works Association on January 9 by A. Percy Witchell.

Later, naturally, our craftsman began to specialise in particular branches of his work, and these specialists kept to their various districts. Thus swords, tools, bits and nails were made in and around Birmingham, knives at Sheffield and so forth. Chaucer, who died in 1400, speaks of a "Sheffield Whittle."

This segregation led to the smiths being named according to their various specialities, such as arrowsmiths, shoemsmiths, &c., a tendency which would seem to have persisted to the present day, as an advertisement recently appeared in a daily paper for a "perambulator smith," a delightful instance of modern developments in this direction, if the "specialist" was required to do no more than forge the far from intricate ironwork to be found in a most useful domestic article.

With all these branches of smithcraft, it is not surprising to find the word passing into surnames in a multitude of ways. Thus we have the Smiths and Smythes of England, and the Gows, Gowans and Cowans of Scotland, the Nasmyths, Spearsmiths, Arrowsmiths, &c.

We have all of us at some time or other read statistics, funny or otherwise, relating to the number of Smiths in various directories, what might happen if all the people of that name were to suddenly become of one mind and act conjointly, together with other far-fetched speculative ideas. Well, when we consider that in 1620 there were 20,000 smiths in and around Dudley alone, it is not surprising to find that this year's Kelly's "Directory of London" gives 2½ columns of Mr. Smiths engaged in various businesses in London and its suburbs.

Was it not Mr. Chesterton who wrote somewhere or other, "The brute repose of nature, the passionate cunning of man, the strongest of earthly metals, the weirdest of earthly elements, the unconquerable iron, subdued by its only conqueror, the wheel and the ploughshare, the sword and the steamhammer, the arraying of armies and the whole legend of arms, all these things are written, briefly indeed, but quite legibly, on the visiting card of Mr. Smith"? The pride of the Smiths should be immense!

From medieval times to the present day the usefulness of the smith is apparent in such a great variety of ways that it would be useless and at the same time impossible to attempt a comprehensive survey of the subject, and we can only deal briefly with his artistic work and his connection with ornament generally.

Here again we are troubled with the magnitude of our subject, and in a short sketch like the present it will be better to keep to a particular section, and to consider, say, the origin of bar- and scroll-work with the embellishments and decorations thereon, showing how by the invention of machinery and the development of processes, what was originally the work of the hand-hammer has now become that combination of manual craft with machine-rolled and stamped "raw material" (if such it can be termed), which is known as "Ornamental Ironwork" at the present day.

In accordance with the limitations just laid down, it is fair to exclude specifically consideration of cast iron, though we may not be prepared to agree entirely with Ruskin in his "Seven Lamps of Architecture" where he says:—"I believe no cause to have been more active in the degradation of our national feeling for beauty than the constant use of cast-iron ornaments. The common ironwork of the middle ages was as simple as it was effective, composed of leafage cut flat out of sheet iron and twisted at the workman's will. No ornaments, on the contrary, are so cold, clumsy and vulgar, so essentially incapable of a fine line or shadow, as those of cast iron . . . and I feel very strongly that there is no hope of the progress of the arts of any nation which indulges in these vulgar and cheap substitutes for real decoration."

Such was Ruskin's sweeping condemnation of cast iron. But that there is an art and a delicate art in cast iron stands without doubt. Splendid specimens of the most dainty jewellery of cast iron, for instance, can be seen in a wall case in Room 31 of South Kensington Museum, dated as of the "early nineteenth century."

To study the progress of ornament in iron through a nation's history is almost to watch the progress of that nation's civilisation.

The earliest history of ornament in iron in our own country is obscured by lack of examples, and for this we must blame the unfavourable character of our climate as much as the perishable nature of our metal.

Some few specimens of work done in the Romano-British period remain, several small articles crudely ornamented—such as candlesticks—having been unearthed in excavating,

and these must be considered among the first specimens of native work extant. Examples may be seen at the Guildhall Museum.

We are able, however, to trace the elementary inspirations of the smith, which suggested decoration combined with utility, in his treatment of door hinges, than which no ancient object wrought in iron is more frequently preserved. They probably escaped destruction on account of their being firmly fixed to the wood, and, being always before the eye, were protected from rust by tinning, gilding or other surface decoration.

Early examples of these hinges are interesting, and to follow their elaboration, first for the purpose of protection and then for ornament, is to discover considerable ingenuity in the smith of the period.

The hinges themselves would be hidden behind the stone-work and the straps placed on both sides of the door, being fastened through the wood, thus giving a strength sufficient to withstand an enemy bent on pillage or slaughter such as might, at any time, assail the church or castle.

For illustration of our early bar-work, let us take some of these hinges. First, there is the simplest form, consisting of straight or crescent-shaped straps such as still exist at Stillingfleet Church in Yorkshire. Then the more elaborate hinges from St. Albans Abbey, two of which are now in South Kensington Museum, Room 24.

The strap consists of two sets of spreading scrolls, three on each side of a central stem. The scrolls terminate in rudely formed masses, perhaps intended to imitate the head of a lizard. The central stem divides into four roughly forged leaf shapes, whilst a small bull's head is fashioned at the base of the stem, part of which is missing. An extra strap, at right angles to the main one, strengthens it near the hinge, and all the work is ornamented with cross hatchings of chisel cuts.

The elaboration to which this ornamenting of hinges developed is to be seen on the doors of Durham Cathedral. Here the whole of the door is covered with iron strapwork. The hinge straps themselves are of "C" shape, with a straight stem issuing from the centre, and dividing into several scrolls. There are two on each door and they are connected by geometric form of design consisting of a diamond, with quatrefoil centre, divided laterally and vertically by stems continuing to scrolls, each junction of scrolls also containing a tongue or leaf-shaped ornament.

These examples all date from the twelfth century, those at Durham being regarded as existing since 1135.

Although curved in design, we do not find in early hinges specimens of scrolled iron in the general modern acceptation of the term.

(To be continued.)

VARIETIES.

PLANS for the extension of Batley Boys' Grammar School have been passed. It is proposed to spend 6,000*l.* in making provision for 200 boys.

NEGOTIATIONS are proceeding between the Sunderland and South Shields Councils with a view to arranging for an extension of the Sunderland Asylum.

THE Canadian Society of Civil Engineers, comprising 3,000 members, opened a four days' session at Winnipeg, commencing on January 24. The Society is organised on the same basis as the Institution of Civil Engineers of London.

THE Board of Education approve the plans submitted by the Warrington Education Committee of a proposed elementary school in Parr Street to accommodate 1,260 pupils. It is proposed to erect places at first for only half that number.

THE Nobels Explosives Co., Ltd., are applying to the Linlithgow Town Council for consent to the establishment on ground at the East Low Port of a new factory, consisting of an additional magazine, two mixing-houses, and a boiler-house, for which the Home Secretary had already granted a draft licence.

GREENOCK Dean of Guild Court have passed plans for an addition to the Corporation Electricity Works at Dellingburn Street. Only one turbo-generator is to be constructed, but floor space will be provided for two additional sets, which it is anticipated will be required in two or three years' time.

MESSRS. PATMAN & FOTHERINGHAM, LTD., builders, have been awarded the contract for the erection of warehouse premises in Kingsland Road, N.E., for Messrs. John Carter & Sons, Ltd., and another large contract is the additions and reconstruction of Nos. 42-46 Fore Street, E.C., for Sir Richard Stapley and Mr. H. Smith.

MR. HUGH GAVIN, architect, Arbroath, has been instructed by the directors of the Arbroath Infirmary to prepare a report on the proposed reconstruction of that institution, with special reference to the recommendations of Dr. D. J. Mackintosh, of Glasgow.

HIS EXCELLENCY THE EARL OF ABERDEEN, K.T., has consented to act as Patron of the twenty-sixth annual Congress of the Royal Sanitary Institute, to be held at Belfast from July 24 till 29, 1911. The Right Hon. Lord Dunleath, D.L., J.P., has consented to act as President of the Congress. The public meeting to inaugurate arrangements for the Congress will be held at the City Hall, Belfast, on Tuesday next.

At the monthly meeting of the Withington Committee of the Manchester Council, the surveyor reported that 664 dwelling-houses had been certified for habitation during the past twelve months. This is the highest number recorded in the area which formerly constituted the Urban District of Withington.

MESSRS. APPLETON & SON, architects, Torquay, have prepared plans for a provided school to be erected at an inclusive cost of 8,000*l.* on the Homelands site, Torquay, and accommodating 450 children. The plans, which have been approved by the local education committee, are to be submitted to the Board of Education.

THE Stretford District Council on Tuesday resolved to accept the offer of the Rylands trustees to sell the Rylands Hall estate for the sum of 14,500*l.*, for the purposes of a public park, subject to a poll of the ratepayers and the sanction of the Local Government Board. The estate is 63 acres in extent. The Council propose, however, to sell as building plots an area approximating to 11 acres, which it is estimated would largely reduce the cost to the ratepayers.

MR. P. MACGREGOR CHALMERS, F.S.A., I.A., of Glasgow, has prepared plans for a Romanesque church about to be erected at Corstorphine, near Edinburgh. It is proposed to build at first only the church (which will be seated for 675 worshippers), the vestry, session rooms, and the base of the tower to the height of 27 feet, which really forms the vestibule of the church. The estimated cost of this is 6,250*l.*, the greater part of which has already been raised.

At Edinburgh Dean of Guild Court last week there were eighteen cases on the roll, and eleven of the applications were either granted or remitted to the Burgh Engineer. In several cases Lord Dean of Guild Carter remarked on the unsatisfactory and incomplete nature of the plans presented by builders and others, and asked that in future more consideration might be shown the Court. The plans, he said, should always be clear and distinct.

THE Society of Engineers (Incorporated) announce that for the next three years "The Status Prize" is offered for the best paper on "How to Improve the Status of Engineers and Engineering, with special reference to Consulting Engineers." In 1911 the prize will consist of books and (or) instruments to the value of 6*l.* 6*s.* The essays, which should contain between 4,000 and 6,000 words, must be sent in to Mr. A. S. E. Ackermann, the secretary, by May 31.

THE Chester Refuse Destructor Committee, after the visit of a deputation to the refuse crusher at Southwark, have decided that they could not recommend such an installation for Chester on account of the improbability of securing a daily sale of the crushed refuse at a remunerative price, and on account of the noise of the machinery. They have received four tenders for the erection of a refuse destructor at the sewage works.

THE Special Committee of the Liverpool City Council which, since its creation three years ago, has been considering the abattoir question, finally decided on Monday to recommend the Council to take over and work the public abattoirs, and to erect new abattoirs, dead meat market, and live cattle market on the Love Lane site of 13½ acres, near the Stanley Dock. The cost of the Love Lane scheme is estimated by the majority report at 160,000*l.*, and by the minority of six members, who recently issued a separate report, at 200,000*l.*

THE Lancashire Education Committee on Monday agreed to the renewal of the grant of 1,000*l.* for temporary assistance to the county architect for one year, and that the allowance for the architect's permanent staff be increased from 2,700*l.* to 3,000*l.* per annum. In increasing the allowance for the permanent staff, the Committee say they feel it to be desirable to appoint a surveyor rather than an architect, someone to inspect school sites, obtain information with regard to them, and assist the local committee in their selection and purchase.

THE Edinburgh Town Council last week had under consideration a recommendation that in the next Provisional Order powers be asked to have all staircases in new tenements placed next the outer walls. It was agreed to remit the matter to the Streets and Buildings Committee. Notice of motion was given that it be remitted to the Lord Provost's Committee to consider as to the expediency of an exhibition illustrative of town planning being held in Edinburgh at an early date, and that they communicate with the Local Government Board for Scotland and ascertain the probable cost to the Corporation.

PLANS were passed in the Edinburgh Dean of Guild Court on the 19th inst., and warrant granted to the North British Electric Theatres, Ltd., for alterations at 18 and 20 Nicolson Street and 3 Hill Square, so that a theatre might be constructed. The existing hall on the site will be entirely cleared away. The main hall of the new theatre will have an internal area of 55 feet by 40 feet. There will be seating accommodation on the ground floor for about 500 persons, and in the dress circle for about 80. The north elevation of the building fronting the College of Surgeons will be treated architecturally. The architect is Mr. Hippolyte J. Blanc, R.S.A.

THE monthly report of the Amalgamated Society of Joiners and Carpenters returns the membership at 56,831, made up as follows:—Forty-eight thousand two hundred and twenty-seven ordinary section, 271 junior section, and 1,501 Australasian trade section, added for the first time. There were 4,763 members unemployed, 1,476 in receipt of sick benefit and 2,641 on superannuation. The new financial scheme recommended by the General Council had been adopted, the voting figures being—in favour, 10,957; against, 5,495; majority in favour, 5,462. This, the General Council state, will remove what has been one of the most formidable hindrances to organising work.

THE Tenants' Co-partnership Association held a meeting on Tuesday, with a sub-committee of the Newcastle Corporation, on their proposed lease of the Corporation's Walker Estates. The price the Association offered was 1*d.* per square yard over the whole of the 300 acres, which price included land for street-making. This works out at an annual rental of 30*l.* per acre. The association undertakes to develop the land at the rate of 20 acres per annum. Otherwise, if the demand should meet their expectation, the scheme might be developed in a much quicker period. The system of leasing to be adopted will be the 99 years' principle. The full scheme provides accommodation for between 20,000 and 25,000 persons, upon town-planning lines, averaging from 12 to 15 houses per acre. The site is in close proximity to the works that Messrs. Armstrong, Whitworth & Co. are providing at Walker.

TRADE NOTES.

MESSRS. DOULTON & Co., LTD., Royal Doulton Potteries, Lambeth, S.E., have added to their many honours that of potters to his Majesty the King.

MESSRS. THOMAS CRAPPER & Co., LTD., Marlborough Works, 120 King's Road, Chelsea, S.W., are again the recipients of Royal favour, having been honoured by a Royal Warrant of appointment as sanitary engineers to His Majesty King George V.

THE PATENT CHIMNEY POT Co., LTD., have devoted an illustrated booklet to their "Champion Chimney Pot" and "Champion Ventilator." The pot is all in one piece, and is made in fire-clay and terra-cotta at very moderate prices. No less than 100,000 of them are already in use all over the country. The principle is as sound as it is simple.

OZONAIR, LTD., 96 Victoria Street, S.W., have issued a short pamphlet descriptive of their Ozonair system of water purification. This firm, who have already several orders in hand for installations, are the sole manufacturers of such apparatus in this country. In the Ozonair sterilising system the water (previously freed from all suspended matter) is first atomised in presence of a stream of ozone within the upper portion of the apparatus, the minutely divided particles of liquid being allowed to fall upon the upper part of a pile of glass spheres through the interstices of which the stream of ozone is caused to ascend whilst the liquid, already partially ozonised and sterilised, descends over the surfaces of the spheres in a very thin film. On reaching the bottom of the pile the water is allowed to fall into a tank through which the ozone is forced upwards in fine jets, the water being retained in the tank and subjected therein to this third ozonising process for any predetermined length of time according to requirements.

THE

Architect and Contract Reporter.

FRIDAY, FEBRUARY 3, 1911.

Published weekly, subscription 19s. per annum for Great Britain, and for Colonial and Foreign subscriptions £1 6s. 6d. All business communications to the Managing Director,

P. A. GILBERT WOOD,

Publishing Offices, 6-11 Imperial Buildings, Ludgate Circus, London, England.

Telephone No. 4725 Holborn.

Branch Offices at 43 OLD QUEEN STREET, S.W., Messrs. W. HAY FIELDING & CO. being the representatives for all business purposes.

The Birmingham Offices are at 102 COLMORE ROW.

. Entered in the United States of America as second-class matter.

AGENTS FOR AMERICA:

The International News Co., 5 Bream's Buildings, Chancery Lane, London, England, and New York.

AGENTS FOR CANADA:

Messrs. WM. DAWSON & SONS, Ltd., 91 Church Street, Toronto, to whom all correspondence for Subscription and Advertising Rates should be made.
Subscription \$5.20.

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Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

Special Position Spaces.—Unless ordered for weekly insertions the Proprietors cannot guarantee particular dates.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit the insertion of lengthy communications.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

. As great disappointment is frequently expressed at the nonappearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

ARGENTINE.—April 20.—A competition of plans for a hospital and school of medicine, to be erected at Rosario in celebration of the Argentine Centenary at a cost of about 149,000l. Prizes of 1,050l., 700l. and 440l. will be awarded. A copy of the conditions, &c., may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, London, E.C., where also a limited number of copies are available for distribution. Plans must be sent to the "Secretaria de la Comisión Pro-Hospital é Instituto de Enseñanza Médica del Centenario, Calle Córdoba 1230," Rosario.

ATHENS.—Aug. 21.—An international competition of plans is invited by the Greek Ministry of the Interior (Public Works) for the erection of a Court of Justice at Athens. The cost of the building must not exceed 160,000l. A first prize of 800l., and a second prize of 320l. will be awarded. The Greek Official Gazette, containing particulars (in Greek and in French) may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

BRADFORD.—May 1.—The Board of Management of the Bradford Infirmary invite plans with estimates for a new infirmary in Duckworth Lane. Mr. Keith D. Young, F.R.I.B.A., will act as assessor. Deposit 3l. 3s., which will be refunded on receipt of a bona-fide design or if block plan, instructions, &c., are returned within a month after receipt of replies to competitors' questions. The Secretary Superintendent of the Royal Infirmary, Bradford. (For further particulars see advertisement, January 13.)

COVENTRY.—April 1.—The Corporation contemplate the erection of municipal offices in the centre of the city, and also possibly a town hall, and accordingly invite competitive designs. Mr. E. Guy Dawber, F.R.I.B.A., will act as assessor. Deposit 2l. 2s., which will be refunded on receipt

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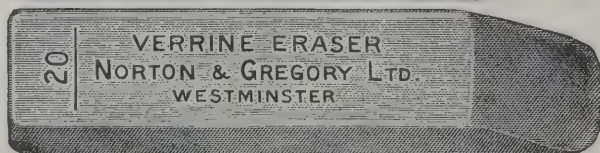
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of a bona-fide design or if the particulars are returned within fourteen days of receipt. Mr. Geo. Sutton, town clerk, 10 Hay Lane, Coventry. (For further particulars see advertisement, November 18.)

CUBA.—April 15.—An international competition has been arranged for a Presidential Palace to be erected at Havana at a cost of about 205,000*l*. Premiums of 10,000 pesos and 5,000 pesos will be awarded. Conditions may be seen at the Cuban Legation, 3 Grosvenor Mansions, Victoria Street, S.W., or the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

DUNFERMLINE.—The Carnegie Trust invite architects to furnish competitive designs for the erection of a Women's Institute. For conditions apply to the Secretary of the Carnegie Dunfermline Trust, Abbot Street, Dunfermline.

LEICESTER.—The Corporation invite architects practising in Leicester to supply plans, designs, and estimates for a public hall to be erected adjoining the Victoria Park and Regent Road. Premiums of 100*l*., 50*l*., and 25*l*. will be awarded. Deposit 1*l*. 1*s*. Mr. E. G. Mawbey, M.Inst.C.E., Town Hall, Leicester.

LLANDRINDOD WELLS.—The Urban District Council invite competitive plans for a pavilion in the recreation ground. First and second premiums will be awarded by an assessor. Mr. D. C. Davies, clerk, Llandrindod Wells.

MANCHESTER.—March 31.—The Corporation invite designs for a Library and Art Gallery upon the Piccadilly site in the centre of the city. The Preliminary Competition closes March 31. The authors of ten selected designs will compete in the Final Competition. Mr. Reginald Blomfield, A.R.A., will act as assessor, in connection with the city architect. Apply for particulars to Mr. Thomas Hudson, Town Clerk, Town Hall, Manchester. (For further particulars see advertisement, January 6.)

ROMFORD.—The Town Planning and Modern House and Cottage Exhibition at Gidea Park, Squirrels Heath, in the Romford Garden Suburb, summer 1911. Class IV.—Town plan of Gidea Park—prizes of 100*l*. and 50*l*. Class VII.—Open to builders. For excellence of workmanship and construction in the erection of a cottage in Class I. or II.—first prize, gold medal and 100*l*.; second prize, 50*l*. Final dates for designs; Class IV., March 31, 1911. Mr. Michael Bunney, A.R.I.B.A., hon. secretary, 33 Henrietta Street, Strand, W.C.

SOUTHAMPTON.—The Council of Hartley University College invite designs for the proposed new buildings. Mr. H. T. Hare, F.R.I.B.A., will act as assessor. The deposit of 1*l*. 1*s*. with the application will be returned if the conditions are returned within fourteen days. Mr. D. Kiddle, registrar, Hartley University College, Southampton.

ST AUSTELL.—Feb. 25.—The committee invite architects practising in the county of Cornwall to submit designs for a cottage hospital, to be erected on the Trewoon Road. The estimated cost must not exceed 1,500*l*. Three premiums, viz., 12*l*. 12*s*., 8*l*. 8*s*., and 5*l*. 5*s*., are offered. Apply to Mr. H. Hodge, C.C., Trevarrick, St. Austell, Cornwall.

CONTRACTS OPEN.

APPLETREETWICK.—Feb. 9.—The West Riding education committee invite whole or separate tenders for the following works, viz.:—New conveniences, extension of playgrounds, &c. (builder), at Appletreewick Council school. Send 1*l*. deposit to the West Riding Treasurer, County Hall, Wakefield.

BANBURY.—Feb. 9.—For extension of Banbury Post Office. The Postmaster, Banbury Post Office. Deposit 1*l*. 1*s*. H.M. Office of Works, Storey's Gate, London, S.W.

BANBURY.—Feb. 13.—For repairs to the caretaker's quarters, Town Hall. Mr. N. H. Dawson, C.E., borough surveyor, Town Hall, Banbury.

BATH.—Feb. 25.—For the erection of engine-house, suction gas-house, and other appurtenant works, in Midland Road, Twerton. Deposit 2*l*. 2*s*. Mr. W. H. Radford, C.E., Albion Chambers, King Street, Nottingham, and the City Surveyor's Office, Guildhall, Bath.

BECKENHAM.—Feb. 6.—For erection of lavatory block at the Public Swimming Baths, Beckenham Road, for the Urban District Council. Deposit 1*l*. Mr. John A. Angell, surveyor.

BEESTON.—Feb. 10.—For the whole or any portion of the following trades (mason and bricklayer, plumber, plasterer, slater, iron and steel work) required in erection of a cloth warehouse and offices at New Mills. Mr. T. A. Buttery,

F.I.A.S., architect, Queen Street, Morley, and 1 Basinghall Square, Leeds.

BELFAST.—Feb. 6.—For erection of a block of buildings at Castle Street and Fountain Street, for Messrs. W. Coates & Son, Limited, electrical engineers. Deposit 2*l*. 2*s*. Messrs. Young & Mackenzie, architects, Scottish Provident Buildings, Belfast.

BELFAST.—Feb. 13.—For erection of two additional villas on the Purdysburn Estate, for the Asylum Committee of the Belfast Corporation. Messrs. Watt, Tulloch & Fitzsimons, architects, 77A Victoria Street, Belfast. Send 2*l*. 2*s*. deposit to Mr. R. Meyer, town clerk.

BIRKENHEAD.—Feb. 21.—For addition of a storey to the main block, Union Workhouse, Church Road, Tranmere. Deposit 5*l*. 5*s*. Messrs. Edmund Kirby & Sons, architects, 5 Cook Street, Liverpool.

BOLTON-UPON-DEARNE.—Feb. 13.—For erection of forty-eight dwelling houses at Highgate, for the Bolton-upon-Deane Urban District Council. Deposit 2*l*. 2*s*. Mr. J. W. Wilson, surveyor, Council Offices, Station Road, Bolton-upon-Deane, Yorks.

BROADSTAIRS.—Feb. 13.—For the construction of public conveniences on the Parade and at the rear of the Council Offices. Mr. H. Hurd, C.E., town surveyor, Council Offices, Broadstairs.

BRIGHTON.—Feb. 7.—For alterations, &c., to an office at the Parochial Offices, Prince's Street. Mr. B. Burfield, clerk, Parochial Offices, Prince's Street, Brighton.

CATERHAM.—Feb. 15.—The Metropolitan Asylums Board invite separate tenders for the following works at Caterham Asylum, Caterham, Surrey:—(1) Alterations and additions and forming new pump-room, &c.; (2) installation of a vertical steam engine and horizontal steam service pump and piping connections. Deposit 1*l*. each contract. Mr. W. T. Hatch, M.I.C.E., M.I.M.E., engineer-in-chief, the Office of the Board, Embankment, London, E.C.

CHELMSFORD.—Feb. 11.—For supplying and delivering iron fencing and gates at the Trinity Road Council school. Mr. W. H. Pertwee, architect, The Institute, London Road, Chelmsford.

COLNE.—Feb. 6.—For the various works in the erection of the Laneshawbridge Council school. Apply by February 6 to Messrs. Holgate & Spivey, architects, Colne.

DEWSBURY.—Feb. 8.—For the various works required in altering property in Bond Street. Messrs. Kirk, Sons & Ridgway, F.R.I.B.A., architects and surveyors, Market Place, Dewsbury.

FARLETON.—Feb. 10.—For erection of a filter house in the Parish of Farleton, South Westmorland. Mr. G. B. Atkinson, Milnthorpe.

GOMERSAL.—Feb. 9.—The West Riding Education Committee invite whole or separate tenders for the following works at Gomersal New School, viz.:—Builder, joiner, slater, plumber, plasterer, painter, smith and iron founder, and heating engineer. Education Architect, County Hall, Wakefield, and the Divisional Clerk, Heckmondwike. Send 1*l*. deposit to the West Riding Treasurer, County Hall, Wakefield.

GRAVESEND.—Feb. 13.—For the construction of an open-air swimming bath in the Gordon Recreation Ground; also for the construction of water-supply drains, &c. Deposit 1*l*. The Borough Surveyor's Office, Gravesend.

HAYTON (CARLISLE).—Feb. 11.—For building a new wing (15 ft. by 22 ft.) and other offices to Hayton Public Room, and for cementing the whole exterior of both the existing and new portions. Mr. F. P. Barbour, hon. secretary, The Schoolhouse, Hayton.

HEREFORD.—Feb. 8.—For the erection of a secondary school in Widemarsh Street, Hereford, to accommodate 150 boys, together with the laying out of playground and boundary fence, &c. The County Surveyor, Shire Hall, Hereford.

HULL.—Feb. 10.—For the erection of a reading-room at the Pickering Park, Hessle Road. Mr. Joseph H. Hirst, city architect, Town Hall, Hull. Send a deposit of 2*l*. 2*s*. to the City Treasurer.

ILKLEY.—Feb. 6.—For erection of country residence, Ilkley. Mr. W. H. Herbert Marten, A.R.I.B.A., 3 Cookridge Street, Leeds.

IRELAND.—Feb. 9.—For erection of one block of four dwellings, with store, office, ladder shed, ashpit, and fencing, at Glencolumbkille, County Donegal, and one for similar house at Valencia Island Lighthouse, County Kerry, for the Commissioners of Irish Lights. The Harbour Engineer's Office, Londonderry; Harbour Engineer's Office, Belfast; Harbour Commissioners' Office, Galway, and Mr. Hubert G.

Cook, secretary, Irish Lights Office, Carlisle Buildings, Dublin.

IRELAND.—Feb. 14.—For building an addition at Laragh House, Bandon. Messrs. W. H. Hill & Son, architects, 28 South Mall, Cork.

KEIGHLEY.—Feb. 8.—For the various works (except joiner's and painter's) required in erection of a pair of houses in Raglan Street, off Fell Lane. Messrs. John Haggas & Sons, architects, North Street, Keighley.

KEIGHLEY.—Feb. 11.—For the construction, erection, and removal of a new outside stage, for the Keighley Friendly Societies' Gala Committee. Messrs. R. B. Broster & Sons, architects and surveyors, Craven Bank Chambers, Keighley.

KING'S NORTON (NEAR BIRMINGHAM).—Feb. 8.—For the erection of a shelter in the Cotteridge Park. Deposit 1*l.* 1*s.* Mr. Ambrose W. Cross, surveyor, 23 Valentine Road, King's Heath.

LANCASTER.—Feb. 15.—For the work required in erection of an elementary school on the High Street estate adjoining Dallas Road—viz. drainer and asphalter, excavator, mason and bricklayer, carpenter and joiner, plumber, glazier and gasfitter, slater and plasterer, and painter. Mr. Arthur G. Bradshaw, borough surveyor, Town Hall, Lancaster.

LONDON.—Feb. 9.—The Southwark Guardians are desirous of receiving tenders for the rebuilding of the upper part of the chimney shaft at their Infirmary, East Dulwich Grove, S.E. Deposit 2*l.* 2*s.* Mr. A. W. Tribe, architect, 120 Clapham Road, S.W.

LONDON.—Feb. 14.—For the construction of underground sanitary conveniences, at Buckhold Road, Garratt Lane, Wandsworth. Deposit 1*l.* 1*s.* The Borough Engineer and Surveyor's Office, 215 Balham High Road, S.W.

MACCLESFIELD.—For alterations at the General Infirmary. Mr. H. E. Hanrahan, secretary, General Infirmary, Macclesfield.

MANCHESTER.—Feb. 8.—For the erection of an extension to the shoemaker's shop at the schools at Swinton, near Manchester. Deposit 10*s.* 6*d.* Mr. A. J. Murgatroyd, architect, 23 Strutt Street, Manchester.

MANCHESTER.—Feb. 8.—For erection of a fireproof staircase at their schools at Swinton, near Manchester, for the Guardians. Deposit 10*s.* 6*d.* Mr. A. J. Murgatroyd, architect, 23, Strutt Street, Manchester.

MANCHESTER.—Feb. 15.—For erection of baths at Burton Road, Withington, for the Corporation. Deposit 3*l.* 3*s.* The City Architect, Town Hall.

MARGATE.—Feb. 13.—For supply, delivery, and laying of the flooring of a concrete hall about to be erected on the sea front at the Fort, Margate, of either oak or rock maple. Mr. E. A. Borg, borough engineer, 13 Grosvenor Place, Margate.

MELTHAM (HUDDERSFIELD).—Feb. 6.—For erection of a boiler-house and for the heating by hot water heating apparatus of the typhoid fever block, at the Colne and Holme Joint Isolation Hospital. Mr. Joseph Berry, architect, Market Place, Huddersfield.

MILNTHORPE.—Feb. 23.—For new residence, garage, and motor car works at Milnthorpe, near Kendal. Mr. John F. Curwen, F.R.I.B.A., F.S.A., architect and sanitary engineer, 26 Highgate, Kendal.

MORVAL.—For erection of two farmhouses and two sets of farm buildings at Lydcott Farm, Morval, St. Germans, Cornwall. Mr. S. G. Carnell, county land agent, Public Rooms, Truro.

MYTHOLMROYD.—Feb. 11.—For erection of a bathroom at the head teacher's house at the Burnley Road Council School, Mytholmroyd. The Divisional Clerk's Office, Tuel Lane, Sowerby Bridge.

PAISLEY.—Feb. 7.—For extension and alterations to Paisley Head Post Office. The Postmaster, Paisley Head Post Office. Send 1*l.* 1*s.* deposit to H.M. Office of Works, 3 Parliament Square, Edinburgh.

RADSTOCK.—Feb. 10.—For erection of a lock-up shop at Fortescue Road. Forward names by Feb. 10 to Messrs. Gibson & Hancock, architects and surveyors, Radstock, Somerset.

ROCHDALE.—Feb. 7.—For the various works in connection with the alteration of the Departmental Offices in the Town Hall, viz.:—General contractors' work; oak screens, lift casings, counters, and fitments; and painters' work. The Borough Surveyor's Office, Town Hall, Rochdale.

SCOTLAND.—Feb. 6.—For the mason, carpenter, slater, and cement works of the following cottages, viz.:—Parish of Tarves, for the Haddo House Estates (Aberdeen): (1) Nethermill, single cottage; (2) Smiddyhill, single cottage; (3) Moss Side, single cottage; (4) Oldtown of Fochel, single cottage. Parish of Methlick: (5) Newton, double cottage;

(6) Balquhindachy, double cottage. Parish of New Deer: (7) Mains of Drum, single cottage. The Estate Office, Aberdeen.

SCOTLAND.—Feb. 7.—For the mason, carpenter, slater, plaster, plumber, and painter and glazier works of a drill hall to be erected at Banchory for the 7th Battalion Gordon Highlanders (T.F.), for the County of Kincardine Territorial Association. Messrs. Walker & Duncan, C.E., architects, 3 Golden Square, Aberdeen.

SCOTLAND.—Feb. 7.—For mason, carpenter, slater, plaster, and plumber work for addition on dwelling-house, Dorbshill, Auchmacoy. Mr. Ruxton, architect, 84 Union Street, Aberdeen.

SHERBORNE.—Feb. 9.—For the erection of an elementary school. The County Surveyor's Department, County Offices, Dorchester, and Messrs. Fletcher, Son & Brett, Wimborne.

SOUTHAMPTON.—Feb. 9.—For small additions to the Pavilion, Royal Pier. Deposit 1*l.* 1*s.* Mr. E. Cooper Poole, A.M.I.C.E., engineer and surveyor to the Board, Harbour Offices, Town Quay, Southampton.

STOCKPORT.—Feb. 6.—For the labour and materials required in (a) boarding the roof over a swimming bath, and (b) alterations to sanitary accommodation, &c., at St. Petersgate Baths. Mr. John Atkinson, A.M.I.C.E., borough surveyor, Town Hall, Stockport.

WALES.—Feb. 6.—For erection of an infants' school at Lower Pentrebach, Merthyr Tydfil, for the education committee. Deposit 2*l.* 2*s.* Deputy Surveyor, Town Hall, Merthyr Tydfil.

WALES.—Feb. 6.—For the erection of 97 houses in Risca, Mon., for the Risca Urban District Council. Plot "A," 30 houses; plot "B," 34 houses; plot "C," 33 houses. Deposit 2*l.* 2*s.* Mr. A. J. Dardis, surveyor, Council Offices, Risca, Mon.

WALES.—Feb. 9.—For erection of new house, at Bryn'refail, Cwmvglo. Mr. Evan J. Williams, 2 Orwig Terrace, Bryn'refail.

THE LATE MR. H. N. HAWKS, I.S.O.

By the death of Mr. Henry Nicholas Hawks, I.S.O., which took place on the 30th ultimo, His Majesty's Office of Works has sustained a severe loss.

Mr. Hawks entered the Department in 1877, and was attached to the Scottish Branch of the Office in Edinburgh. After serving there as architect and surveyor for some years, during which time he was identified with the erection of many important buildings in Scotland, he was promoted to be architect and surveyor in charge of public buildings generally in the provinces. During this period of his service he designed and supervised the erection of the following buildings amongst many others:—Custom House, Post Office and Inland Revenue Office, Southampton; County Courts at Croydon, Swansea, and Cardiff; and the Royal Naval College, Osborne. In 1907 he was placed in charge of the Royal Palaces and most of the public buildings in London, with the exception of post offices, &c.; and whilst holding this post he has been responsible for the erection of the new melting house at the Royal Mint, the Patent Office extension, and many large works of alteration and improvement to buildings of national and historical importance such as the Tower of London. But the most notable works entrusted to him during this period have been the extension and fireproofing of the National Gallery and the erection of new offices for the Board of Agriculture. Unhappily in neither case has he lived to see the successful issue of his labours.

The National Gallery works will not only provide much-needed additional galleries, but the fireproofing of the previously existing galleries will ensure the adequate protection of the national works of art. The Board of Agriculture will be one of the finest Government buildings in London. Its intricate construction presented problems in connection with the foundations which were happily solved by Mr. Hawks.

In recognition of his services in designing and supervising the building of the Royal Naval College at Osborne, which in point of rapidity of construction was a remarkable feat, and in preparing the residence of the late Queen Victoria at Osborne for use as a convalescent home for officers of the Navy and Army, King Edward VII. appointed Mr. Hawks a Companion of the Imperial Service Order.

MR. ERNEST H. BIRD, of 26 Clare Street, Bristol, has been appointed Bristol agent for the London Asphalte Company, Ltd.

TENDERS.

ABBOTS LANGLEY.

For private street works in Abbots Road, for the Watford Rural District Council. Mr. ERNEST LAILEY, surveyor, Watford.		
Elliot & Co.	£3,620	14 0
Free & Sons	3,387	19 6
Bliss	3,373	0 10
Wright	3,342	11 0
Bracey & Clarke	3,300	0 0
Pitkin	3,200	0 0
Mann	3,096	7 0
JAGGARD, Bushey (<i>accepted</i>)	2,950	0 0
Surveyor's estimate	3,331	0 0

BARKBY.

For iron fencing, gates, gravel paths, &c., at the new cemetery. Mr. CECIL OGDEN, architect, 4 Welford Place, Leicester.		
Hall	£198	0 0
Agar	193	0 0
Jones	191	19 0
Hutchinson	181	10 0
Palmer	180	0 0
Moore & Sons	178	10 0
Jewel	173	3 4
Searl & Co.	172	19 6
Burbidge & Co.	172	15 6
Stimpson & Rollston	172	9 2
Ball	160	10 0
Frisby	158	0 0
SLEATH, Rothley (<i>accepted</i>)	155	10 3

DERBY.

For the erection of additional County Council offices in St. Mary's Gate. Mr. GEO. C. COPESTICK, Licentiate R.I.B.A., County Offices, Derby. Quantities by Messrs. EDIS & DALE, quantity surveyors, 16 Great Marlborough Street, London, W.		
Hodges	£23,090	0 0
J. & J. Warner	22,400	0 0
Weston & Son	21,869	0 0
Harris & Hunt	21,735	0 0
Wildgoose	21,686	11 0
Wood & Son	21,500	0 0
Morley & Sons	21,294	0 0
Dickinson	21,268	0 0
Ford & Son	20,875	0 0
Lowe & Sons	20,840	0 0
Kershaw	20,750	0 0
Pegg & Bailey	20,730	14 0
Walker & Slater	20,490	0 0
Smith	19,911	0 0
WALKERDINE, Bridge Street, Derby (<i>accepted</i>)	19,540	0 0
Penny	17,435	0 0

GRANTHAM.

For rebuilding the Spotted Cow Hotel, London Road. Messrs. SHEPPARD & LOCKTON, architects and surveyors.		
Rudd & Son	£1,738	0 0
Hockley & Co.	1,716	13 3
Read	1,596	0 0
Wright & Co.	1,595	0 0
Smith	1,497	0 0
BROWN & SONS, Newark (<i>accepted</i>)	1,480	0 0

LONDON.

For the supply of timber required for the alteration and adaptation for tramway purposes of No. 23 Belvedere Road, for the L.C.C.		
Johnson	£147	18 11
Elliott	142	6 7
Marshall & Son	140	10 8
Burt, Boulton & Haywood (<i>incomplete tender</i>)	138	16 11
Putney	138	2 5
Howard Bros. & Co.	137	17 3
INGRAM, PERKINS & Co., Beech Street, E.C. (<i>accepted</i>)	127	4 10
Chief Officer of Tramways estimate	145	0 0

LONDON—continued.

For the supply and delivery of auxiliary hand-gear for penstocks at or near the Abbey Mills, Deptford, Falcon Brook, Lots Road and Crossness pumping-stations, for the L.C.C.		
Sykes	£1,251	0 0
Whitehead & Poole	1,133	0 0
Hunter & English	1,075	0 0
Blakeborough & Son	905	0 0
WALLER & SON, Stroud, Gloucester (<i>accepted</i>)	813	0 0
For the supply of 500,000 stoneware cable ducts required in connection with the electrification of further portions of the London County Council's tramways.		
Doulton & Co.	£6,600	0 0
Sutton & Co.	5,600	0 0
Mansfield	4,731	5 0
STANLEY BROTHERS, Nuneaton (<i>recommended</i>)	4,487	10 0
Skey & Co.	*4,375	0 0
Chief Officer of Tramways estimate	5,000	0 0

* Not to specification.

SOUTHAMPTON.

For alterations to "F" Warehouse, Town Quay, for the Harbour Board. Mr. E. COOPER POOLE, A.M.I.C.E., engineer to the Board.		
Stevens & Co.	£250	0 0
Douglas	249	10 5
Jenkins & Sons	237	0 0
Franklin & Co.	237	0 0
NICHOL, Southampton (<i>accepted</i>)	222	0 0

THURNSCOE.

For carrying out private street works in George Street, for the Urban District Council. Mr. R. HIGGINBOTTOM, surveyor.		
Porter	£1,090	0 0
Drake & Sons	1,056	0 0
Guest	979	14 0
Dickinson	904	0 0
Hann	850	0 0
ROBERTS, Gainsbro' (<i>accepted</i>)	836	0 0
Green & Sons	810	0 0
Gray & Sons	776	0 0
Eyre	726	18 1

WALTHAMSTOW.

For proposed new road, Highams Park, Walthamstow, N. Messrs. STANLEY, PARKES & BROWN, surveyors.		
Dunmore	£1,042	12 7
Kavanagh & Co.	987	5 8
Bloomfield	970	18 8
Grounds & Newton	942	19 1
W. & C. French	827	16 1
KNIFTON, Edmonton (<i>accepted</i>)	813	15 11

For erection of a block of out-offices, removal of existing offices, new iron fencing, &c., at the Higham Hill Girls' School, also the provision and erection of about 1,250-foot run of wrought-iron unclimbable fencing, with concrete dwarf wall to frontage portions, &c., on the Longfield-avenue site. Mr. H. PROSSER, M.S.A., architect.

Iron Fencing, Longfield Avenue Site.

Wood Bros.	£516	17 6
Page	500	0 0
Coxhead	498	0 0
R. & E. Evans	476	0 0
Couper	475	13 6
Hammond & Son	460	0 0
Sands	450	0 0
Horswill	429	0 0
J. & J. Dean, Walthamstow (<i>recommended</i>)	422	0 0

New Out-offices, Higham Hill Girls' School.

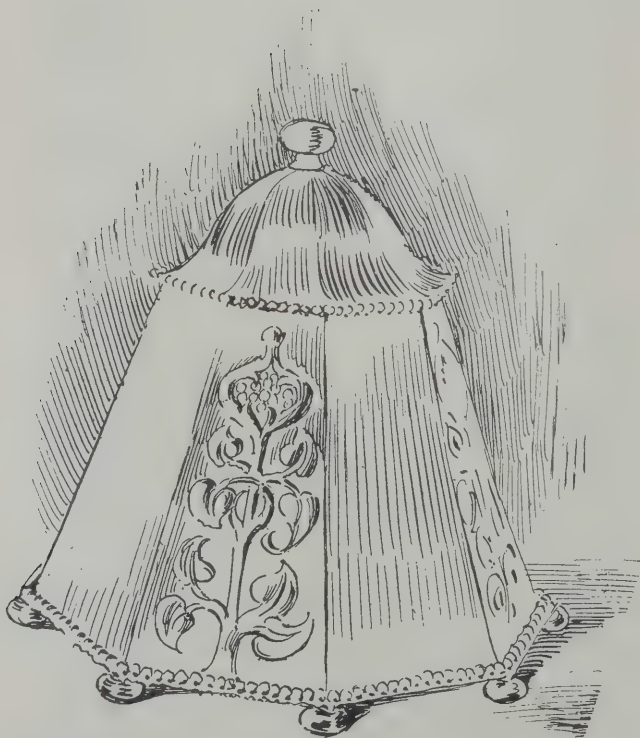
Harston & Co.	272	10 0
Lown & Co.	267	18 0
Sands	265	15 0
Hammond & Son	260	0 0
R. & E. Evans	243	0 0
Coxhead	239	0 0
Dainton	239	0 0
Wood Bros.	224	17 6
Horswill	224	0 0
J. & J. Dean	215	0 0
G. M. Page, Walthamstow (<i>recommended</i>)	215	0 0



Decorative Pots
by Walter Crane
made by Mow & Co.



Selenium Glass
designed by Harry Powell
exhibited by Jas Powell & Son



A Casket by C. R. Ashbee



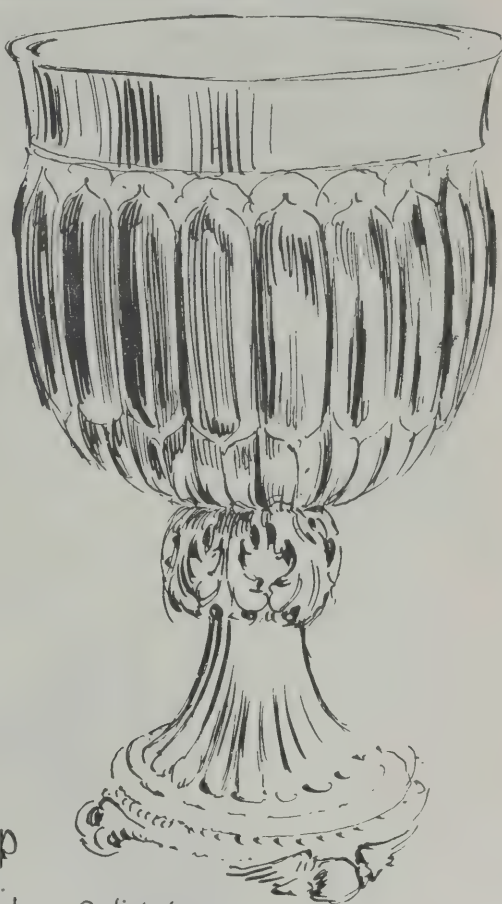
Cauldle Cup
by C. J. Bradshaw



Silver Bowl
by Gilbert Marks



A beaten silver
goblet
by Gilbert Marks



Old cup

Silver Exhibition 1901
Burlington Fine Arts Club

SUBWAYS IN TRAFALGAR SQUARE.

THE following statement has been prepared by the Improvements Committee of the London County Council with regard to the suggested construction of subways under Trafalgar Square, Charing Cross, &c.

The construction of subways for foot passengers at Charing Cross was originally provided for by the Baker Street and Waterloo Railway Company's Act of 1899. This system of subways was designed to commence on the western side of Charing Cross near Drummond's Bank, crossing thence to the eastern side of Charing Cross near the junction of Charing Cross with Northumberland Avenue, thence under Northumberland Avenue to the Grand Hotel, thence under the Strand to Charing Cross Post Office and under the roadway of Trafalgar Square to a point near the Havelock statue. The company subsequently abandoned their intention to construct the station under the carriageway of Charing Cross, as they had come to an arrangement with H.M. Office of Woods, &c., to place the station under the footway paving of Trafalgar Square and the subways described above became unnecessary as approaches to the station.

In 1905 the company introduced a bill which proposed to abandon the subways except the portion between Charing Cross Post Office and the Havelock statue, and sought to authorise new subways commencing near the Nelson Monument and crossing the roadway of Charing Cross to the footway opposite the Phoenix Fire Office. It was also proposed to repeal section 43 (5) of the Act of 1899, thus abandoning the continuation, which had been provided for by the late Vestry of St. Martin-in-the-Fields, of the subway from the south side of Northumberland Avenue to Drummond's Bank. The bill was opposed by the Westminster City Council on the ground that the substituted subways sought to be authorised thereby would necessitate the removal by the city council of a public convenience and the construction of another convenience in its place, and that no similar provision to section 43 of the Act of 1899 was inserted as regards the substituted subways. Protracted negotiations were carried on between the city council and the company, and finally on June 16, 1905, an agreement was made between the parties. The principal terms of this agreement, as stated by the city council in its petition against the company's bill of 1909, were

as follows: The company were to construct at their own cost a subway for foot passengers from their station in Trafalgar square to the south side of Charing Cross as shown on a plan attached to the agreement; the city council was to alter, enlarge or reconstruct, on either side of the subway, the public conveniences, the sewers, &c., affected being diverted at their own cost. In consideration of the agreement the company agreed to pay 6,000*l.* to the City Council in discharge of all liabilities, and the City Council agreed to support the bill. The Council petitioned against the bill of 1905 and obtained various protective clauses. The bill duly passed into law.

In 1909 the company introduced a bill providing, *inter alia*, for the abandonment of the subways authorised by the Act of 1905 and for the cancellation of the agreement dated June 16, 1905, with the City Council. The Bill was opposed by the City Council, and a petition was also deposited by the Council objecting to the abandonment of the subways on the ground of the increasing traffic in the neighbourhood of Charing Cross. We understand that it was subsequently decided by the Parliamentary Committee to co-operate in the opposition of the City Council. The report of the Home Department on the bill stated that, in the opinion of the police, the subways were particularly desirable, as the crossings in Trafalgar Square were some of the most dangerous in London.

According to the minutes of the City Council of April 29, 1909, a conference was held between the City Council and the company at which it was urged by the then chairman of the company (Sir George Gibb) that such passenger subways as had been constructed were of no practical benefit either to the company or to the public, and that the subways to be constructed by the company were not required for the purposes of the railway or the convenience of passengers using it. He contended, therefore, that the company should be released from the obligation to construct the subways, in return for which they were prepared to pay a substantial sum as a contribution to any other subway the City Council might desire to construct. The City Council subsequently stated to the Council that, in view of the uncertainty as to what would be the most advantageous position for the permanent site of the convenience in Trafalgar Square when the proposed alterations had been completed, it had agreed with the company to abandon its opposition to the cancellation of the

agreement of June 16, 1905, on payment by the company to the City Council of 10,000*l*. The City Council further stated that of this sum 6,000*l*. would be expended upon the necessary removal of the convenience and the remaining 4,000*l*. would then be available for the construction of such subways communicating with the convenience or for such other public purposes as might seem to be indicated for the benefit of the public. The Parliamentary Committee accordingly decided to withdraw the opposition to the Bill as far as the subways were concerned, but in May, 1909, they intimated to the City Council that, while they were of opinion that adequate provision should be made for the protection of foot passengers at this very dangerous crossing, they relied on the City Council to do what was necessary in this respect.

The Bill of 1909 was, however, withdrawn by the Company immediately before it would have been considered by the Committee of the House of Commons to which it had been allotted. The arrangement between the City Council and the company appears to have been contained in certain heads of agreement which were sealed by the parties, and the 10,000*l*. was thereupon paid by the company.

A PICTUREDROME FRONT.

The rapid erection of cinematograph palaces under various aliases has brought a new problem. Our illustration shows a treatment which has given the greatest satisfaction. The exterior was coated with "Zingessol"—the perfected water paint—immediately after the plasterers had finished. The effect has been much admired, and it is believed that several other erections are to be similarly treated. The interior was also most successfully decorated with "Zingessol." This paint is the latest production of Mr. J. B. Orr, and is manufactured by Orr's Zinc White, Ltd., at Widnes, Lancashire.

MR. E. SEWARD v. CARDIFF CITY COUNCIL.

MR. M. MUIR-MACKENZIE, High Court Official Referee, gave judgment on February 1 in the action of Seward v. the Lord Mayor, Aldermen, and Citizens of Cardiff, the evidence given at the protracted hearing having already been reported in *The Architect* in December and January issues.



On November 10, 1910, the formal agreement embodying the terms of settlement came before the City Council for consideration, and, after considerable debate, it was approved.

There are now no Parliamentary powers for the construction of the works, as the time limited by the Act of 1905 for the construction of the subways expired on August 4, 1910.

We are advised that the powers conferred on the company by their Act of 1905 were purely permissive, and that the company could not have been compelled to exercise them. The Council has no knowledge of the terms of the agreement between the company and the City Council other than such heads of the agreement as have been mentioned in the communications or public documents of the City Council, and it is therefore not possible to say to what extent, if any, the City Council is bound to construct any, and if so, what subway or within what time any such work should be completed.

THE Executive Committee of the fund for providing a statue of the late Queen Victoria, to be erected in the forecourt of the new Municipal Buildings at South Shields, have selected the designs submitted by Mr. F. W. Doyle Jones, of West Hartlepool and London, and Mr. Albert Toft, of London, for final decision.

The Official Referee, in the course of his judgment, said that the claim of the plaintiff, as formulated at the trial, was substantially for remuneration for work done for the Corporation as the architect for the purpose of a scheme for establishing a Welsh museum of a national character in Cardiff, and for damages for breach by the Corporation of an agreement under seal by which the plaintiff was appointed architect for the scheme. The amount of money claimed by the architect was very large, amounting in all to between 6,000*l*. and 10,000*l*., and, put in untechnical language, was based on the fact alleged by him that if the agreement had been carried out he would have been architect for the Corporation in the designing and carrying out of a building to cost about 150,000*l*., on which he would have been entitled to a remuneration of 5 per cent.

The defendants, continued the Official Referee, had paid into Court 1,000*l*. and a further sum of 500*l*., wholly denying liability; therefore the total sum paid into Court was 1,500*l*.

The Official Referee went on to say that he could not award the plaintiff compensation on anything like the scale he claimed. On the other hand, he thought it his duty to have regard to the fact that the plaintiff was undoubtedly employed to do a large amount of work under the contract, and a larger amount than he would otherwise have done had the circumstances been different. Taking all the facts into

consideration, he found that the 1,500*l.* the defendants had paid into Court was an adequate and proper remuneration to the plaintiff. He therefore gave judgment for the defendant Corporation, with the general costs of the action, the plaintiff to have the 1,500*l.* paid into Court. Plaintiff would have the costs on the question of liability.

IRON: ITS WORKER AND A PORTION OF HIS WORK.*

(Continued from last week.)

Whether grilles of scrolled iron were used in English or in French churches first is not known, but the fully developed Norman cathedral called for the extensive use of grilles and screens.

The earliest type known in this country is at Winchester, dating 1090 or thereabouts. The design is monotonous, mainly consisting of three vertical scroll groups to each door or grille, divided laterally in the centre by a bar, making six panels. These panels are again sub-divided into two sets of six "C" scrolls, three lying one within the other and being placed back to back with other three. The terminals of these scrolls are all finished in cinquefoil.

A reproduction of part of this work is in the Ironwork Gallery at South Kensington, and a study of the detail leads me to suppose that the original was repaired on more than one occasion, and that the new additions did not exactly match or fit in with the old work.

At Lincoln Cathedral grilles of later period (circa 1200) are still preserved, although these panels are very simple in style, being merely a collection of "C" scrolls. The ancient appearance of this specimen is now spoilt by a cresting of more modern cast iron, totally out of character with the original work.

Canterbury and Chichester Cathedrals also contain work of this century. Specimens of grilles from these buildings can be studied with ease at that treasure-house of technical art, the Victoria and Albert Museum, South Kensington, which is constantly referred to in this paper, and at which every facility for gathering information is offered by the officials.

We find here two panels from Chichester, one labelled "13th Century," and the other "Early 15th Century." In the earlier one, which is in a dilapidated condition, the majority of the design is of quatrefoils, though a portion of the work is of totally different style, for the scrolls here finish with crude stampings, the size and shape of a chestnut, which bear a fleur-de-lys design on one side and a six-petalled rosette on the other. We have evidently to consider this work as a later repair, and a bad one at that.

The fifteenth-century panel is interesting on account of the regularity of the design as a whole and in detail. It consists of a framework of squares, each square containing a single quatrefoil, and all the iron is of the same section. The bars are neatly half-jointed at their intersecting points.

The various religious dissensions in our country have been responsible for the destruction of the early grillework which no doubt adorned most of our great cathedrals and abbeys.

With the development of Gothic architecture in the thirteenth century design in ironwork received considerable advancement in style. Ornaments such as stampings and foliage of a crude kind began to be introduced, the vine being largely used as a pattern in design.

Where repetition in detail warranted it, the smith would carefully prepare dies and beat the hot iron into them, obtaining, of course, exact reproductions of form.

The preparation of these chilled iron dies was certainly in vogue early in the thirteenth century, but it was not until its closing years that any great use was made of them. Thomas de Leghton (who was associated with Leighton Buzzard) was largely responsible for their popularity.

His most noted work is the so-called "Eleanor grille" in Westminster Abbey. In this grille we can, perhaps, trace the origin of scroll embellishment to France, similar characteristics being found in French grilles of the period, indicating that De Leghton had probably been to France and had brought back with him fresh and up-to-date ideas from across the Channel.

The Eleanor grille is an elaborate piece of work, consisting of eleven panels rivetted to a rectangular frame curved outwards, with a cresting of trident spikes. Nine of the

panels are alike in idea, that is, of close scroll design with vine-leaf stamped ornaments, the other two panels being stiffer and less flowing in their treatment. Crude bulls' heads of hammered and chiselled work appear in places. The grille was made in 1294 at a cost of 180*l.* in modern money. The work was carried out at Leighton Buzzard, as we read of an extra of 15*l.* for carriage and sundries.

After the death of De Leghton the fashion in ironwork appears to have changed, and he himself does not seem to have passed on his secrets or appliances to any successor.

With the beginning of the fourteenth century a new development was introduced, and the old simple blacksmithing, by which is meant work with hammer and chisel, gave way before it.

All work considered up to the present was produced by the use of these implements alone, joints being made by welding, and scrolls in grille work being fastened together chiefly by collars or else by punching holes through the hot iron and inserting rivets.

To appreciate the beauty of the ancient work is difficult in these days of ready-rolled bars of all shapes and sizes, until we consider that our early smith had to beat his bars and scrolls from rough lengths of very indefinite shape. Such poor material produced one advantage at least. It gave variety to even the most monotonous of designs.

Prior to this point heat had always been considered necessary in working iron, but in the fourteenth century we find the coming of the "cold-iron" smith, with his vice, drill, file and saw. Sheet iron is now brought into use, and tracery work added. Flowers and leaves are cut or beaten as requirements demand. The smith would even go out of his way to copy architectural forms not altogether suitable to his material.

It was the much closer contact with Eastern peoples which followed upon the Crusades that led to this advancement, for the West has ever been glad to adopt forms of art which were primarily Eastern, and here, no less than in the more primitive working of iron, the East once again had something to teach.

Much greater scope was imparted to the craft by the use of these new methods, and ironwork was introduced in many new ways. Window grilles of tracery work, lock plates and other door furniture may be mentioned as examples, the smith being enabled to get much richer effects with far less labour than hitherto.

In grille work we find a wave of fashion for geometrical designs passing over the country from the fourteenth to the fifteenth centuries. We get rectangular panels filled in with a network of bars, with a border of sheet iron pierced in quatrefoils, and similar set designs, some of the work being halved, lapped and rivetted much in the same way as a joiner would treat wood.

One of the earliest of these geometrical grilles formerly shielded the shrine of St. Alban, in the abbey dedicated to his memory, and was made at the beginning of the fourteenth century. It is still in the same abbey, but now stands in front of the tomb of Humphrey, Duke of Gloucester, in the Saints' Chapel. It consists of forty-two panels, fourteen in a row, the panels being bars crossed and rivetted, alternately of square mesh and diamond. A small rosette covers the rivet at every crossing.

In the chantry of Henry V. at Westminster Abbey is another specimen of a grille of this period, made in 1428 by Roger Johnson, of London.

Nevertheless, we find examples of the more conventional forms of smithcraft still occurring during this period in tomb railings, and many elaborate enclosures of the time still exist.

The fifteenth century and the beginning of the sixteenth in England were rather the age of the locksmith than of the scrollsmith, with whom we are endeavouring to keep as closely as possible, but one famous Belgian family of the period kept scrollwork before the public eye, and, for this reason, a brief mention of foreign work, hitherto studiously avoided, must be made.

The Matsys family lived in Louvain, and the head of the family, Josse, occupied in his own person the three important posts of architect, clockmaker and blacksmith to the township. The famous well cover against Antwerp Cathedral is probably the work of this man, although it has been attributed to Quintin Matsys the painter. The latter, however, was a mere child at the time, the work being dated 1470.

There was a Quintin Matsys who became famous for his ironwork, but this man was the son of Josse and could not have been more than four years old when the well cover in question came into being. Many works in this country are

* Read before the members of the Incorporated Clerks of Works Association on January 9 by A. Percy Witchell.

attributed to Quintin, notably a pair of gates at St. George's Chapel, Windsor, which originally shielded the tomb of Edward IV., and another pair in Bishop West's Chapel in Ely Cathedral.

(To be continued.)

METAL FILAMENT LAMP PATENTS.

ALTHOUGH electric patents are outside the wide sphere of an architect's professional interest, a case was commenced last week in the Chancery Division which, though concerned with patent rights in an electric lamp is of sufficient importance to demand notice. The plaintiffs were the Osram Lamp Works, Ltd., and they asked for an injunction against Messrs. G. M. Boddy & Co., Ltd., in respect of some of the patents in the well-known Osram lamps, also for an order that the defendants should pay the costs and for a certificate of validity. The action was not, however, fought out, as Messrs. Boddy & Co. consented to an injunction with costs. The defendants act as agents for the "Philips Lamps," which are manufactured by the Philips Metallic Glowlamp Works, Ltd., at Eindhoven, Holland, and exported to this country. It was in respect of these lamps that proceedings were taken.

The proprietors of the "Osram" lamps have, during the past few years, acquired a very large number of protecting patents, and two of these were, it was alleged, infringed in the manufacture of the Philips lamp. Their victory was complete. The Philips Metallic Glowlamp Works, Ltd., will henceforward, by the agreement entered into, manufacture the Philips lamps under a license from the Osram Company, and a clause controls prices, discounts, and the quantities of those imported into this country.

The General Electric Company, Ltd. (who are the selling agents of the Osram Lamp Works, Ltd.) hope to signalise the victory, not by raising the prices of Osram lamps, but by a further decrease. The litigation above referred to has for some months past had an unsettling effect on the trade which will now be completely removed and the company can devote themselves to their business without distraction. The result should therefore be to the benefit of the public. The British Thomson-Houston Company have exchanged licenses with the Osram Lamp Works under their respective patents covering metallic filament lamps. The public are therefore free from liability in respect of actions for infringement of patents by purchasing Mazda lamps as well as Osrams.

HOUSE AND COTTAGE EXHIBITION, 1911.

THE response of the architectural profession to the invitation to take part in the architectural and building competition for houses and cottages to be erected in Gidea Park, Squirrels Heath, Romford Garden Suburb, this summer has been, we understand, of a very satisfactory kind. More than 300 architects submitted designs for houses and cottages, of which about 100 will be erected.

The entries for the competition for a Town Plan in Gidea Park remain open until the 31st March. The first prize is 100l., the second prize, 50l., and there is a special prize of 25l. for a perspective drawing of part of the proposed lay-out.

The Judges are Mr. Guy Dawber, Vice-President of the Exhibition, Mr. H. V. Lanchester, F.R.I.B.A., and Mr. Mervyn Macartney, F.R.I.B.A., M.S.A.

The competition should prove an attractive one to architects, as the area to be laid out presents no exceptional difficulties, and the work involved is nothing like so serious or extensive in character as was involved in the recent Town Planning Competition for 1,300 acres at Ruislip. The rapid development of the Romford Garden Suburb, as Gidea Park is called, affords an assurance that the successful designer may hope to see his plan carried out at no distant date. The area to be planned is approximately 300 acres, intersected by the Romford golf course and the Roman road leading to Romford.

MR. R. MORTON RIGG, architect, Penrith, has been instructed to prepare plans for a village hall and institute to be erected at Ullswater, as a memorial to the late Colonel W. H. Parkin.

MESSRS. C. PEARSON SHAW & SON, Ms.Q.S.A., quantity surveyors and arbitrators, have removed their offices from 14 Sherwood Street, Nottingham, to more convenient and commodious premises, 21-23 Goldsmith Chambers, Hippodrome Buildings, Nottingham.

ASSOCIATION OF MASTER PAINTERS IN IRELAND

THE twelfth annual Convention and Exhibition of the Association of Master Painters in Ireland was held in the Royal Hibernian Academy, Lower Abbey Street, Dublin. The Convention, which lasted three days, opened with a reception by the outgoing president, Mr. John O'Connell, Cork. At the subsequent meeting Mr. John M'Intyre (Dublin) was installed President for the ensuing year. The report of the secretary and treasurer showed that the Association is in a most flourishing condition, and carrying on very valuable work in fostering the education of young men engaged in the trade by annual competitions and travelling scholarships and in other directions.

Mr. James Maxwell (Armagh) was appointed President-elect and it was decided to hold the next annual Convention in Armagh.

In the afternoon there was a formal opening of the Convention and Exhibition by Count Plunkett, Hon. A.R.I.B.A., Director-General of the National Museum of Science and Art, who said the industry in which the Master Painters were engaged was one in which everyone took an interest, because it concerned the question of how to make their houses fit to live in. He congratulated those engaged in the decorating trade in Dublin on the fact that the Association was living and thriving so well. The Association was especially to be congratulated on the work it was doing in preparing the students.

On the following day Count Plunkett distributed the prizes, previous to delivering an interesting address on "Decoration," which he illustrated with fine lumière lantern slides and coloured cartoons. The lecturer first dealt with some of the difficulties of the decorator in his relation to the public; then he showed how, in this artistic craft, there is a demand on many branches of knowledge. As illustrating the history of decoration he gave examples of very simple designs of the eleventh, twelfth and thirteenth centuries from churches and other public buildings. Several photographs from a sculptured altar-piece in the Cluny Museum, and from a portion of the Sainte Chapelle, were thrown on the screen. Count Plunkett laid great emphasis on the mediæval and Renaissance methods of using gold freely, indicating the means whereby the splendour of its effect was relieved from garishness. He instanced, among other examples, Pinturicchio's decorations in the Vatican. He also dealt with the fresh colour schemes of North Italian work, and urged that the colouring of plaster and other reliefs was more than justified in the examples given. Beginning with the close connection of ornament with architecture in the early ages, he showed the importance given to structural design by the painters in the "Golden Age" of Italy, and the continuance of decorative schemes when Naturalism had changed the style of composition in painting. Count Plunkett referred to certain simple rules for producing unity and variety in design and stimulating invention. In conclusion he urged that it was very desirable that Irish workers should develop a native style, pointing out that every race showed its idiosyncrasies in the arts, and that it was for this distinction, even more than for its artistic merit, that much of the best work of Europe was valued by the world.

VARIETIES.

ALTERATIONS estimated to cost about 100l. are to be carried out in the basement of the Guildford Technical Institute, to prevent flooding.

THE Walton Urban Council, Surrey, have decided to adopt a by-law permitting the erection of cottages built of materials other than brick and stone.

A GIFT of 3,000l. has been made to St. Bartholomew's Church, Blackburn. The money is to be spent on building a tower and providing a peal of bells for the church.

MR. RUSSELL REA, M.P., proposes to erect buildings on a site leased from the London County Council at the junction of Smith and Dean Stanley Streets, Westminster. The elevation will be built in red Dutch bricks and Portland stone.

THE North Dublin Rural District Council have agreed to carry out a scheme for the erection of 107 labourers' cottages, and the acquiring of five additional allotments at an estimated cost of 20,000l.

THE Special Committee appointed by the Stockport Town Council to recommend a site for police buildings has chosen a site now used as the town's yard in Wellington Street. The Committee considered several sites, but Mr. H. Beswick, F.R.I.B.A., architect to the Cheshire County Council, reported that three were not suitable, and that the town's yard site was in his opinion the best, being in an excellent position and providing ample space. A handsome approach, he says, could be given by widening Fletcher Street to 40 or 50 yards and forming it as a boulevard.

THE Architect and Contract Reporter.

FRIDAY, FEBRUARY 10, 1911.

Published weekly, subscription 19s. per annum for Great Britain, and for Colonial and Foreign subscriptions £1 6s. 6d. Business communications to the Managing Director,

P. A. GILBERT WOOD,

Printing Offices, 6-11 Imperial Buildings, Ludgate Circus, London, England.

Telephone No. 4725 Holborn.

Advertising Offices at 43 OLD QUEEN STREET, S.W., Messrs. W. HAY FIELDING & CO. being the representatives for all business purposes.

The Birmingham Offices are at 102 COLMOORE ROW.

Entered in the United States of America as second-class matter.

AGENTS FOR AMERICA:

International News Co., 5 Bream's Buildings, Chancery Lane, London, England, and New York.

AGENTS FOR CANADA:

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Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

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EDITORIAL NOTICES.

Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit the insertion of lengthy communications.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

. As great disappointment is frequently expressed at the nonappearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

ARGENTINE.—April 20.—A competition of plans for a hospital and school of medicine, to be erected at Rosario in celebration of the Argentine Centenary at a cost of about 149,000l. Prizes of 1,050l., 700l. and 440l. will be awarded. A copy of the conditions, &c., may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, London, E.C., where also a limited number of copies are available for distribution. Plans must be sent to the "Secretaria de la Comisión Pro-Hospital é Instituto de Enseñanza Médica del Centenario, Calle Córdoba 1230," Rosario.

ATHENS.—Aug. 21.—An international competition of plans is invited by the Greek Ministry of the Interior (Public Works) for the erection of a Court of Justice at Athens. The cost of the building must not exceed 160,000l. A first prize of 800l., and a second prize of 320l. will be awarded. The Greek Official Gazette, containing particulars (in Greek and in French) may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

BRADFORD.—May 1.—The Board of Management of the Bradford Infirmary invite plans with estimates for a new infirmary in Duckworth Lane. Mr. Keith D. Young, F.R.I.B.A., will act as assessor. Deposit 3l. 3s., which will be refunded on receipt of a bona-fide design or if block plan, instructions, &c., are returned within a month after receipt of replies to competitors' questions. The Secretary Superintendent of the Royal Infirmary, Bradford. (For further particulars see advertisement, January 13.)

COVENTRY.—April 1.—The Corporation contemplate the erection of municipal offices in the centre of the city, and also possibly a town hall, and accordingly invite competitive designs. Mr. E. Guy Dawber, F.R.I.B.A., will act as assessor. Deposit 2l. 2s., which will be refunded on receipt

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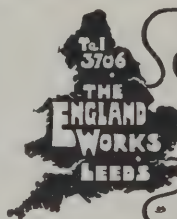
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f a bona-fide design or if the particulars are returned within fourteen days of receipt. Mr. Geo. Sutton, town clerk, 10 Hay Lane, Coventry. (For further particulars see advertisement, November 18.)

CUBA.—April 15.—An international competition has been arranged for a Presidential Palace to be erected at Havana at a cost of about 205,000l. Premiums of 10,000 pesos and 5,000 pesos will be awarded. Conditions may be seen at the Cuban Legation, 3 Grosvenor Mansions, Victoria Street, W., or the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

DUNFERMLINE.—The Carnegie Trust invite architects to furnish competitive designs for the erection of a Women's Institute. For conditions apply to the Secretary of the Carnegie Dunfermline Trust, Abbot Street, Dunfermline.

LOWESTOFT.—The Education Committee invite architects practising or residing in Norfolk and Suffolk to submit designs for an elementary school. Premiums of twenty, ten, and five guineas. Particulars may be had on payment of 5s. from Mr. R. Beattie Nicholson, town clerk, Town Hall, Lowestoft. For further particulars see advertisement, Feb. 10.

MANCHESTER.—March 31.—The Corporation invite designs for a Library and Art Gallery upon the Piccadilly site in the centre of the city. The Preliminary Competition closes March 31. The authors of ten selected designs will compete in the Final Competition. Mr. Reginald Blomfield, R.A., will act as assessor, in connection with the city architect. Apply for particulars to Mr. Thomas Hudson, Town Clerk, Town Hall, Manchester. (For further particulars see advertisement, January 6.)

ROMFORD.—The Town Planning and Modern House and Cottage Exhibition at Gidea Park, Squirrels Heath, in the Romford Garden Suburb, summer 1911. Class IV.—Town plan of Gidea Park—prizes of 100l. and 50l. Class VII.—Open to builders. For excellence of workmanship and construction in the erection of a cottage in Class I. or II.—first prize, gold medal and 100l.; second prize, 50l. Final dates for designs; Class IV., March 31, 1911. Mr. Michael Bunney, A.R.I.B.A., hon. secretary, 33 Henrietta Street, Strand, W.C.

SOUTHAMPTON.—The Council of Hartley University College invite designs for the proposed new buildings. Mr. H. T. Hare, F.R.I.B.A., will act as assessor. The deposit of 1l. 1s. with the application will be returned if the conditions are returned within fourteen days. Mr. D. Kiddle, registrar, Hartley University College, Southampton.

SOUTH MOOR.—March 15.—Competitive designs are invited for parochial hall and institute at St. George's Church, South Moor. Cost not to exceed 1,500l. Premiums of 15l. and 5l. will be awarded. Particulars from Rev. F. S. Myers, South Moor, Stanley, S.O., Durham.

ST. AUSTELL.—Feb. 25.—The committee invite architects practising in the county of Cornwall to submit designs for a cottage hospital, to be erected on the Trewoon Road. The estimated cost must not exceed 1,500l. Three premiums, viz., 12l. 12s., 8l. 8s., and 5l. 5s., are offered. Apply to Mr. H. Hodge, C.C., Trevarrick, St. Austell, Cornwall.

SWINTON.—The Vicar and Churchwardens of Swinton (Rotherham) invite plans, &c., for erection of a parish hall and other buildings. Full particulars on application to Rev. C. Steele, Swinton Vicarage, Rotherham.

CONTRACTS OPEN.

ADWICK-LE-STREET.—Feb. 23.—For the following works:—Adwick-le-Street, Woodlands new school—caretaker's house (builder, joiner, tiler, plumber, plasterer, and painter), for the West Riding Education Committee. The Education Architect, County Hall, Wakefield. Send 1l. deposit to the West Riding Treasurer, County Hall, Wakefield.

BANBURY.—Feb. 13.—For repairs to the caretaker's quarters, Town Hall. Mr. N. H. Dawson, C.E., borough surveyor, Town Hall, Banbury.

BARNSTAPLE.—Feb. 16.—For building a sea-wall and other work at Newberry Beach, Combe Martin. The District Surveyor, 5 Boutport-street, Barnstaple.

BATH.—Feb. 25.—For the erection of engine-house, suction gas-house, and other appurtenant works, in Midland Road, Twerton. Deposit 2l. 2s. Mr. W. H. Radford, C.E., Albion Chambers, King Street, Nottingham, and the City Surveyor's Office, Guildhall, Bath.

BELFAST.—Feb. 13.—For erection of two additional villas on the Purdysburn Estate, for the Asylum Committee of the Belfast Corporation. Messrs. Watt, Tulloch & Fitzsimons,

architects, 77A Victoria Street, Belfast. Send 2l. 2s. deposit to Mr. R. Meyer, town clerk.

BILLINGE.—March 2.—For the removal and erection of a building for phthisis cases in the grounds of the workhouse infirmary at Billinge, near Wigan. Messrs. W. C. Ralph & Son architects, Leader's-buildings, King-street, Wigan.

BIRKENHEAD.—Feb. 21.—For addition of a storey to the main block, Union Workhouse, Church Road, Tranmere. Deposit 5l. 5s. Messrs. Edmund Kirby & Sons, architects, 5 Cook Street, Liverpool.

BOGNOR.—Feb. 18.—For the erection and entire completion of a modern high-temperature destructor, chimney stack and buildings relating thereto. Mr. Oswald A. Bridges, engineer and surveyor, Council Offices, Bognor, Sussex.

BOLTON-UPON-DEARNE.—Feb. 13.—For erection of forty-eight dwelling houses at Highgate, for the Bolton-upon-Deane Urban District Council. Deposit 2l. 2s. Mr. J. W. Wilson, surveyor, Council Offices, Station Road, Bolton-upon-Deane, Yorks.

BRIGHTON.—Feb. 17.—For erection of a public elementary school, in Coombe-road. Messrs. T. Simpson & Son, surveyors to the Committee, 16 Ship-street, Brighton.

BROADSTAIRS.—Feb. 13.—For the construction of public conveniences on the Parade and at the rear of the Council Offices. Mr. H. Hurd, C.E., town surveyor, Council Offices, Broadstairs.

BRUMBY.—Feb. 20.—For erection of a pair of cottages at Brumby, Lincs. Mr. John Potts, 54 Fox-street, Scunthorpe.

BURTON LATIMER.—Feb. 13.—For erection of a public elementary school and special centre at Burton Latimer, Northamptonshire. Send in names by Feb. 13 to Messrs. Gutch & Saunders, architects, Bank-chambers, Kettering.

CHELMSFORD.—Feb. 11.—For supplying and delivering iron fencing and gates at the Trinity Road Council school. Mr. W. H. Pertwee, architect, The Institute, London Road, Chelmsford.

CHELMSFORD.—Feb. 18.—For the construction and complete fitting of four bathrooms at the Union house, Wood Street. Messrs. Chancellor & Son, architects, Duke Street, Chelmsford.

CHOPPINGTON.—March 7.—For the work of erecting a Council school to accommodate 568 scholars. Send names and 2l. 2s. deposit by Feb. 15 to Mr. C. Williams, secretary, The Moothall, Newcastle-on-Tyne.

CROOK.—For alteration to the Dawson Street P.M. Church, Crook, Durham, consisting of new pulpit, choir gallery, raising church floor, &c. Send names to Mr. T. W. T. Richardson, M.S.A., architect and surveyor, 57 High Street, Stockton-on-Tees.

DALTON.—Feb. 13.—For the works required in erection of Dalton new police station, viz.—builder, joiner, tiler, plumber, plasterer, painter, asphalt— for the West Riding Standing Joint Committee. Send 1l. deposit to the West Riding Treasurer, County Hall, Wakefield. Sealed tenders, properly endorsed, and addressed to Mr. J. Vickers Edwards, West Riding Architect, County Hall, Wakefield, must be received by 10.30 A.M. on February 13.

GLOUCESTER.—Feb. 20.—For the following works, for the Gloucestershire Territorial Force Association:—(1) Erection of a drill hall and other buildings; also alterations to present premises, at Colston Fort, for the Royal Army Medical Corps. (2) Erection of a riding school. Deposit 2l. Mr. J. Craik, architect, Oxford Chambers, 12 St. Stephen's Street, Bristol.

GOLBORNE.—Feb. 27.—For erection of an elementary school at Golborne, near Wigan, to accommodate 474 scholars. Deposit 2l. Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

GRIMSBY.—Feb. 13.—For erection of public convenience at the corner of Hilda Street and Tunnard Street. Mr. H. Gilbert Whyatt, A.M.I.C.E., borough engineer and surveyor, Municipal Buildings, 170 Victoria Street, Grimsby.

HALIFAX.—Feb. 13.—For the execution of the following works, for the Halifax Corporation, viz., (1) supply and fixing of a bath at the lodge, Borough Cemetery; (2) construction of a water closet and lavatory at the slaughter houses; (3) construction of water closet at the Trinity Garage Co.'s premises, Blackwall. Deposit 1l. Mr. James Lord, M.I.C.E., borough engineer, Town Hall, Halifax.

HAVERSHAM.—Feb. 23.—For erection of cottages and farm buildings, alterations and adaptation of buildings at Pike's Farm. The Small Holdings Office, County Hall, Aylesbury, Bucks.

HAYTON (CARLISLE).—Feb. 11.—For building a new wing (15 ft. by 22 ft.) and other offices to Hayton Public Room, and for cementing the whole exterior of both the existing and new portions. Mr. F. P. Barbour, hon. secretary, The Schoolhouse, Hayton.

HORDEN COLLIERY.—Feb. 13.—For the whole of the works required in erection of an hotel at Horden Colliery, Durham. Send names to Messrs. Clark & Moscrop, F.F.R.I.B.A., architects, Feethams, Darlington.

IRELAND.—Feb. 13.—For erection and completion of a lecture hall at Fort Grounds, Hilden, Lisburn. Deposit 10s. 6d. Mr. S. C. Hunter, quantity surveyor, Scottish Provident Buildings, Belfast, or Mr. James Hunter, B.E., architect, Antrim Road, Lisburn.

IRELAND.—Feb. 14.—For building an addition at Laragh House, Bandon. Messrs. W. H. Hill & Son, architects, 28 South Mall, Cork.

IRELAND.—Feb. 17.—For erection of a printworks for the Ulster Printworks, Ltd., at Flush Hall, Newtownards. Deposit 5l. 5s. Mr. Ernest L. Woods, C.E., 97 Main Street, Bangor. Mr. S. C. Hunter, Scottish Provident Buildings, Belfast.

IRELAND.—Feb. 21.—For building a gentleman's residence at Short Castle, Mallow. Messrs. W. H. Hill & Son, architects, 28 South Mall, Cork.

LANCASTER.—Feb. 15.—For the work required in erection of an elementary school on the High Street estate adjoining Dallas Road—viz. drainer and asphalter, excavator, mason and bricklayer, carpenter and joiner, plumber, glazier and gasfitter, slater and plasterer, and painter. Mr. Arthur G. Bradshaw, borough surveyor, Town Hall, Lancaster.

LEEDS.—Feb. 16.—For alterations at (a) Chapelton Council School, and (b) Darley Street Council School. The Education Department (Architect's Section), Calverley Street, Leeds.

LISKEARD.—Feb. 18.—For making additions to the dwelling house at Maudlin, Liskeard, Mr. John Sampson, F.R.I.B.A., Greenbank Lane, Liskeard, Cornwall.

LONDON.—Feb. 14.—For the construction of underground sanitary conveniences, at Buckhold Road, Garratt Lane, Wandsworth. Deposit 1l. 1s. The Borough Engineer and Surveyor's Office, 215 Balham High Road, S.W.

LONDON.—Feb. 15.—For erection of house coal-store and ashpit, &c., at the North-Eastern Fever Hospital, St. Ann's Road, Tottenham, N., for the Metropolitan Asylums Board. Deposit 1l. Mr. W. T. Hatch, M.I.C.E., M.I.M.E., engineer-in-chief, the Office of the Board, Embankment, E.C.

LONDON.—Feb. 15.—For erecting an ash receptacle at the Infirmary, Lower Road, Rotherhithe, S.E., for the Bermondsey board of Guardians. 5l. note deposit. Mr. E. Pitts Fenton, clerk, 283 Tooley Street, S.E.

LONDON.—Feb. 17.—For erection of a new die and seal department at the Royal Mint. Deposit 1l. 1s. Mr. H. N. Hawks, I.S.O., H.M. Office of Works, Storey's Gate, London, S.W.

LONDON.—Feb. 21.—For the construction of an underground convenience in St. James'-place, Aldgate. Deposit 2l. 2s. The Engineer Public Health Department, Guildhall, E.C.

LONDON.—Feb. 21.—For the execution of certain work in connection with the provision of extra lavatory accommodation at their school, Elder Road, West Norwood, S.E., for the Lambeth Board of Guardians. Mr. James L. Goldspink, clerk, Brook Street, Kennington Road, S.E. Deposit 2l.

LONGWOOD.—Feb. 15.—For the various works required in erection of several dwelling houses and shop, Boyd Street, Longwood, Huddersfield. Mr. J. Berry, architect and surveyor, 3, Market Place, Huddersfield.

MANCHESTER.—Feb. 15.—For erection of baths at Burton Road, Withington, for the Corporation. Deposit 3l. 3s. The City Architect, Town Hall.

MANCHESTER.—Feb. 15.—For the foundation work for a 7,500 kw. turbo-generator, floor extensions and air ducts, &c., required at the Stuart Street generating station. Deposit 2l. 2s. Mr. F. E. Hughes, secretary, Electricity Department, Town Hall, Manchester, or Messrs. C. S. Allott & Son, civil engineers, 46 Brown Street, Manchester.

MANCHESTER.—Feb. 16.—For the erection of a Boathouse at Boggart Hole, Clough. Send 1l. 1s. deposit to the City Treasurer. The City Architect, Town Hall, Manchester.

MANCHESTER.—Feb. 18.—For the supply, delivery, and erection of a steel roof, with stanchions and girders for supporting the same, at the Cambridge Street Stoves Depot, Bradford Road. Mr. F. A. Price, superintendent, Gas Department, Town Hall, Manchester, and Mr. J. B. Newbigging, M.I.C.E., engineer, Rochdale Road Station, Manchester.

MARGATE.—Feb. 13.—For supply, delivery, and laying of the flooring of a concrete hall about to be erected on the sea front at the Fort, Margate, of either oak or rock maple. Mr. E. A. Borg, borough engineer, 13 Grosvenor Place, Margate.

MILNSBRIDGE.—Feb. 15.—For the various works required in erection of two dwelling-houses and shop, Manchester Road. Messrs. Lunn & Kaye, architects and surveyors, Milnsbridge and Huddersfield.

MILNTHORPE.—Feb. 23.—For new residence, garage, and motor car works at Milnthorpe, near Kendal. Mr. John F. Curwen, F.R.I.B.A., F.S.A., architect and sanitary engineer, 26 Highgate, Kendal.

MORLEY.—Feb. 16.—For the joiners' and plumbers' work required in erection of dye house at Glen Mills, Morley, Yorks. Messrs. T. A. Buttery, F.I.A.S., architects, Queen Street, Morley, and 1 Basinghall Square, Leeds.

MYTHOLMROYD.—Feb. 11.—For erection of a bathroom at the head teacher's house at the Burnley Road Council School, Mytholmroyd. The Divisional Clerk's Office, Tue Lane, Sowerby Bridge.

NEWCASTLE-UPON-TYNE.—Feb. 13.—For the erection of bowling-green shelters in Nun's Moor Park and Armstrong Park. Send 1l. 1s. deposit to the City Treasurer, Town Hall. The City Engineer, Town Hall, Newcastle.

PORTSMOUTH.—Feb. 22.—For erection and completion of additional wards for male and female patients at the Workhouse Infirmary, Portsmouth, for the provision of accommodation for 465 patients, together with covered ways, operating theatre &c. Send names and 3l. 3s. deposit by Feb. 22 to Mr. S. E. Smith, architect, 145 Victoria Road North, Portsmouth.

RISHWORTH.—Feb. 20.—For the erection of (1) cottage at Spa Clough, and (2) cottage at Green Reservoir, both in the parish of Rishworth, for the Wakefield Corporation. Send 2l. 2s. deposit by Feb. 16. Mr. C. C. Smith, M.I.C.E., waterworks engineer, Town Hall, Wakefield, or at the Waterman's House, Ringstone Reservoir, near Rishworth.

SALE.—For erection of engine house and supply of switchboard and crane, for the Sale Urban District Council. Mr. Charles Hopkinson, M.I.C.E., 29 Princess Street, Manchester.

SCOTLAND.—Feb. 14.—For the mason, carpenter, slater and plaster works of new cottage at Upper Auchencrath, Bellie Elgin. Mr. D. J. Cunningham, factor, the Gordon-Richmond Estates Office, Fochabers.

SCOTLAND.—Feb. 15.—For structural and other work required for proposed extensions to the electricity generating works, Dellingburn Street, Greenock. The work is divided as follows:—Contract A.—Excavator, brick, and mason work. Contract B.—Carpenter work and roof glazing. Contract C.—Structural steel work. Contract D.—Slater work. Contract E.—Plumber work. Deposit 5s. each specification. Messrs. Woodrow & Thomson, measurers, 2 Hamilton Street, Greenock.

SCOTLAND.—Feb. 27.—For the construction of a concrete roof supported on brick pillars, with alternative offer for ferro-concrete work, at Lawton Reservoir. Deposit 2l. 2s. Mr. George Baxter, engineer and manager, Water Engineer's Office, 93, Commercial Street, Dundee.

SPITTALL.—Feb. 27.—For erection of a rocket life-saving apparatus house at Spittall, Northumberland. H.M. Coast Guard Station, Berwick.

STAINLAND.—Feb. 25.—For the various trades required in erection of a farm house and dairy, at Manor House Farm, Stainland, Yorks. Messrs. Chas. F. L. Horsfall & Son, architects and surveyors, Lord Street Chambers, Halifax.

WAKEFIELD.—For certain work to be carried out at the Crofton Council school, and the head teacher's house attached thereto, by bricklayer and joiner, for the Sharlston District Education Committee. Mr. Benj. Sheard, divisional clerk, W.R. Education Offices, Northgate, Wakefield.

WALES.—For erection of a house at Brynecrug. Mr. F. Howarth, architect, Towyn and Barmouth.

WALES.—Feb. 14.—For the rebuilding and reinstatement after fire of the Liverpool Stores, and premises adjacent thereto, Beaufort-street, Brynmawr. Mr. Hy. Waters, M.S.A., architect and surveyor, Ebbw Vale.

WALES.—Feb. 13.—For erection of vestry and classrooms, for the trustees of Carmel C.M. Church, Abercrave. Mr. R. S. Griffiths, M.S.A., architect and surveyor, Tonypany, or Mr. Rhys Davies, Cefnymeusydd, Abercrave.

WALES.—Feb. 20.—For erection and completion of 14 houses at Aberkenfig, for the Pandy Estate Building Club. Mr. F. W. Burnett, architect and surveyor, Tondy, Glam.

WALES.—Feb. 27.—For the erection of a training college for women at Barry, for the Glamorgan County Council. The Barry Docks Police Station, and the Glamorgan County Council Offices, Westgate Street, Cardiff.

WHITLEY.—Feb. 20.—For the erection of farmstead at Whitley, near York (builder, joiner, tiler, plumber, painter). Send 1l. deposit to the West Riding Treasurer, County Hall, Wakefield. The West Riding Treasurer, County Hall, Wakefield.

WOKING.—Feb. 22.—For the construction of an underground sanitary convenience near to the Victoria Arch, Woking Station. Deposit 1l. 1s. Mr. G. J. Wooldridge, surveyor, Council Chambers, Woking.

TENDERS.

CARDIFF.

For electric light wiring of the Kitchener Road Council schools.	
Price, Friend & Co.	£395 5 0
Bedford & Co.	336 17 9
Ellis & Ward	312 17 6
Alger & Sons	303 17 6
Perman	279 0 0
Johnson & Philips, Cardiff (recommended)	249 0 0

HULL.

For erection of new training college, Cottingham Road, including the college block, hostels for men and women students, principal's residence, gate lodge and entrance gates, fencing, drainage, roads, earthwork, &c., for the Education Committee. Messrs. CROUCH, BUTLER & SAVAGE, architects, Birmingham.

Robinson	£51,708 0 0
Foster & Dicksee	49,750 0 0
Bell & Sons	48,970 0 0
Nicholson & Sons (Leeds)	49,095 0 0
Pillatt	48,063 0 0
Moss & Sons	47,430 0 0
Kettlewell	45,920 0 0
Finch & Co.	45,250 0 0
Fenwick	45,050 0 0
Quibell, Son & Greenwood	45,050 0 0
Peers & Son	45,119 10 0
Elvins & Sons	45,000 0 0
Sapcote & Sons	45,077 0 0
Goates & Sons	44,610 0 0
Levitt	44,446 0 0
Barnsley & Sons	44,444 0 0
Panton, Hull *	42,899 0 0

* Recommended. Consideration postponed for one month.

LONDON.

For the execution of the wiring and the supply of fittings for the electric lighting of the extension of the chief station of the fire brigade, for the L.C.C.

Lund Bros. & Co.	£621 10 0
Newbald & Co.	545 10 0
Footo & Milne	528 10 0
Weston & Sons	525 0 0

PINCHING & WALTON, 52 Cannon Street, E.C. (accepted)	460 17 0
Chief engineer's estimate	500 0 0

For the supply of motors to supply motive power in the workshops at the chief station of the fire brigade, for the L.C.C.

Electromotors	£197 0 0
Mavor & Coulson	195 10 0
General Electric Co.	193 5 0
Lancashire Dynamo and Motor Co.	182 4 0
Veritys, Ltd., 31 King Street, W.C. (recommended)	158 18 2
Chief engineer's estimate	165 0 0

SCOTLAND.

For erection of three boat slips at (1) Port an Uidh, (2) Caolis, and (3) Vatersay Bay, in the island of Vatersay, Barra, and in Saltavig Bay, near Lochboisdale, South Uist. Mr. WALTER G. COLES, F.S.I., engineer, Edinburgh.

Taylor	£1,742 0 0
Arundel	1,528 0 0
Macdonald	1,500 0 0
Ross & Mackenzie	1,419 0 0
D. & J. Macdougall	1,361 0 0
Adam	1,294 0 0
E. & T. Stewart	1,272 0 0
Munro	1,260 0 0
MacTavish	1,238 0 0

SLOUGH.

For additions to Messrs. Jeayes, Kasner & Co.'s furniture depository. Mr. JOHN BAKER, architect and surveyor, Slough, Bucks.

Fitt	£777 0 0
Goddard & Sons	766 5 0
Burfoot & Butler	749 0 0
Groom	733 15 10
Deverill	692 10 0
Freeman	681 0 0
Bowyer	665 0 0
BURFOOT & SON, Windsor (accepted)	658 0 0

COMPETITION NEWS.

BRIGHTON.—The following eight architects were invited to compete in Brighton, Hove and Sussex Grammar School Competition:—Messrs. Russell and Cooper, Mr. Henry T. Hare, Mr. Arnold Mitchell, Messrs. Giles, Gough & Trollope, Mr. H. Carter Pegg, Mr. J. A. O. Allan, Mr. John T. Lee, Mr. Alfred W. S. Cross, Mr. John Bilson, F.R.I.B.A., of Hull, who was appointed by the President of the Institute to act as assessor, has now made his report. The design of Mr. S. B. Russell, F.R.I.B.A., of the firm of Messrs. Russell & Cooper, 11 Gray's Inn Square, London, W.C., is selected for the first place. The Governors of the School have accepted his recommendation, reserving to themselves the right to make such modifications as they think desirable. The plans will be on exhibition at the Brighton Grammar School, 80 Buckingham Road, Brighton, from Saturday, February 11, until Wednesday, February 15, from ten to five o'clock.

ILFORD.—The plans of Mr. J. B. Thornley, architect, Blackpool, have been selected in a limited competition for the proposed United Methodist Church at Ilford.

SCUNTHORPE.—The designs submitted by Messrs. George Baines and Son, 5 Clement's Inn, Strand, W.C., have been placed first in the competition for the Congregational Church and schools at Scunthorpe, Lincolnshire.

VARIETIES.

A FACULTY has been applied to build a new vestry and to enlarge the Parish Church of Witley, Surrey, by adding to the North Aisle the existing Vestry.

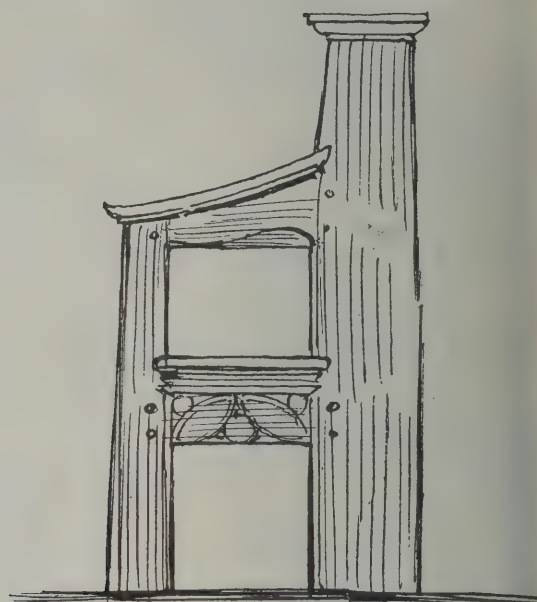
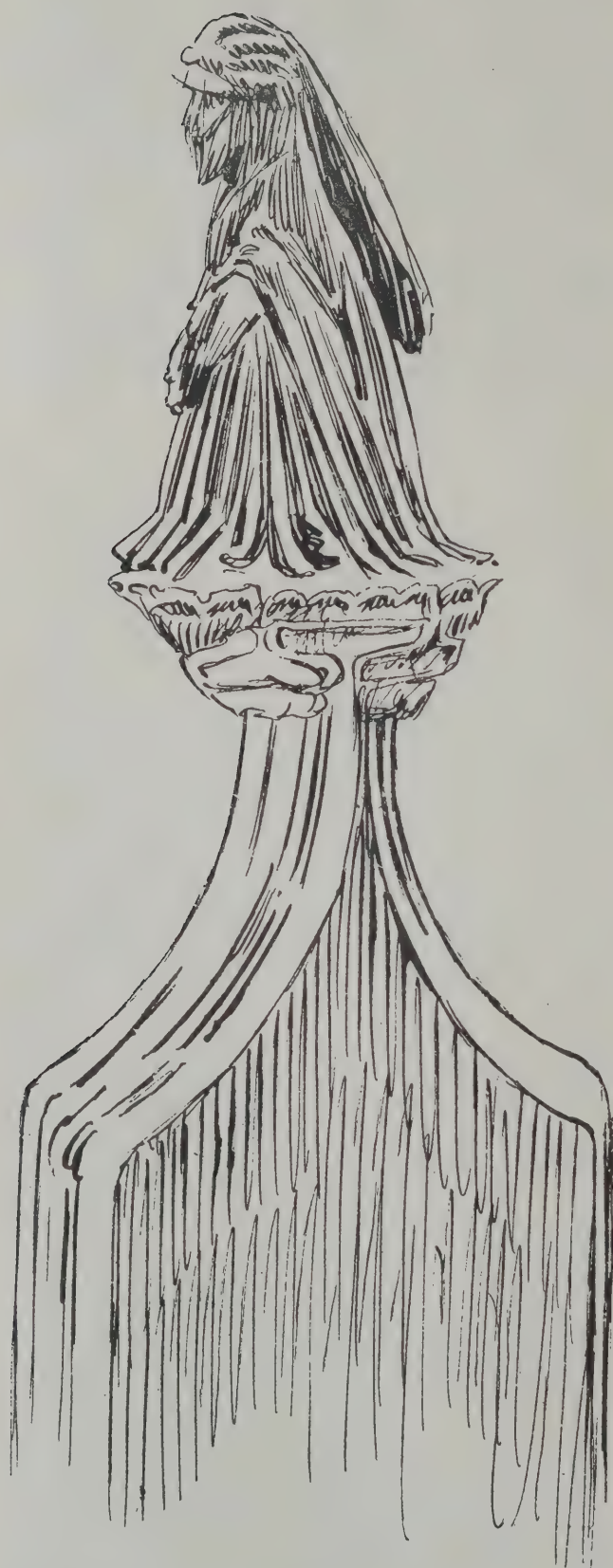
MR. H. ASPINALL, F.R.I.B.A., Liverpool, has been instructed by the Committee of Visitors of the County Asylum at Lancaster to prepare plans for a Female Patients Block. The cost is estimated at 24,000l.

THE Kingstown Urban Council (Ireland) has received a letter from Mr. Andrew Carnegie approving of the plans for the proposed library. The Committee will advertise for tenders for the erection of the building at an early date. About 4,000l. is the amount which will be expended on the building, for which Messrs. O'Callaghan and Webb, architects, have supplied the plans in competition with over 40 competitors.

THE following six applicants have been selected as candidates for the position of architect for the Council schools to be erected at Cowpen by the Blyth Education Authority:—Messrs. Fenwick and Watson, Mr. Jos. Morton, Messrs. Shewbrooke and Hodges, Mr. Chas. Walker, Messrs. Oliver and Leeson, and Messrs. Simpson and Lawson. The final selection will be made at the next meeting of the committee.

SIR WM. RICHMOND, K.C.B., proposed, and the meeting unanimously carried the following resolution at the Smoke Abatement Conference convened by the British Institute of Social Service, in London:—"That in the opinion of this Conference the pollution of the air by coal smoke is injurious to public health and vitality, destructive to works of art and vegetation, and directly demoralising to the inhabitants of all large towns; and that the time has therefore arrived when Parliament should strengthen the hands of local authorities by enabling them to take more effective measures than are at present possible or the suppression of smoke nuisances."

THE Premier Re-forming Co., Ltd., Rubber Manufacturers, Walthamstow, E., have issued an illustrated price-list of some of their manufactures. Their method of demonstrating the value of the process is as convincing as it is simple. They say: "Send us your old rubber with instructions as to what you would like it to be made into, and we will return part of it in the shape of the goods required, together with a quotation for carrying out the complete work." The charge for re-forming naturally varies in accordance with the quality of the rubber and the amount of work involved in the remaking; the saving likewise varies, being upwards of twenty-five per cent. Such goods are indistinguishable from new, and in fact for such purposes as steam valves and goods coming into contact with chemicals it is claimed that re-formed articles are actually better than new. A special feature is made in the list of some sample designs in tiling. In work of this sort there lie great possibilities of use in the building trades, for rubber-flooring can now from time to time be taken up, re-formed and then relaid as good as new. This Company's process must not be confused with those in use for operations like re-enforcing or reclaiming. It is easy to test its value by accepting their offer and sending a trial order, as no liability attaches to the enquirer.



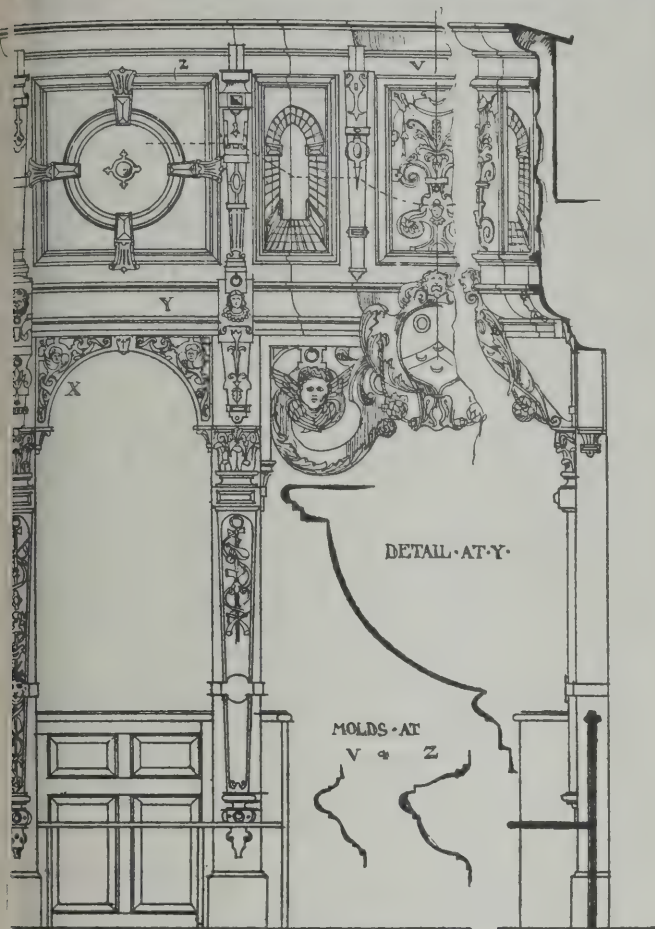
1713

A bench end
Tintagel
F. Forbes Glennie
Architect



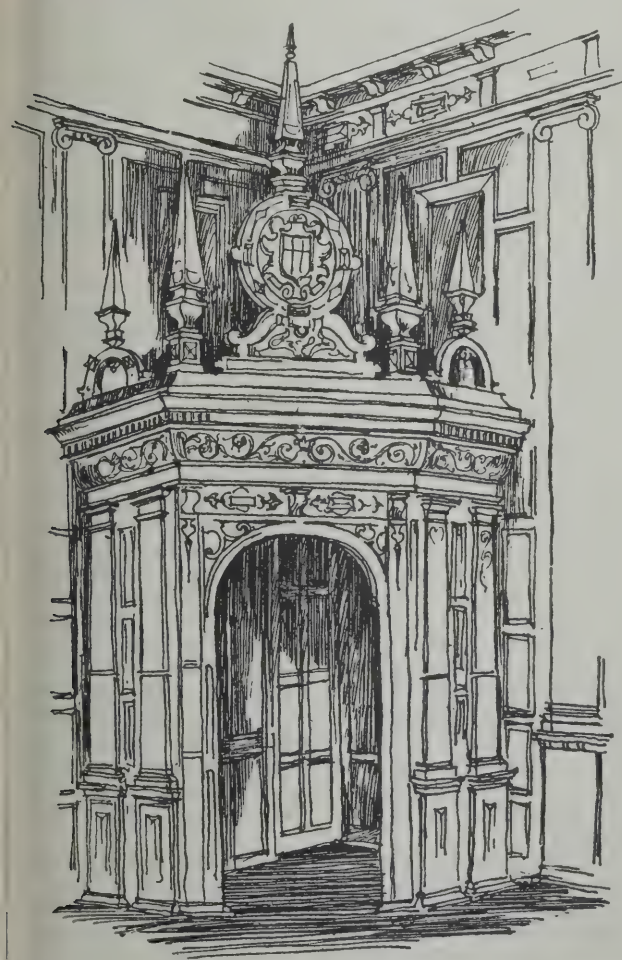
F. Raffles Davison

Old Pew
Towednack

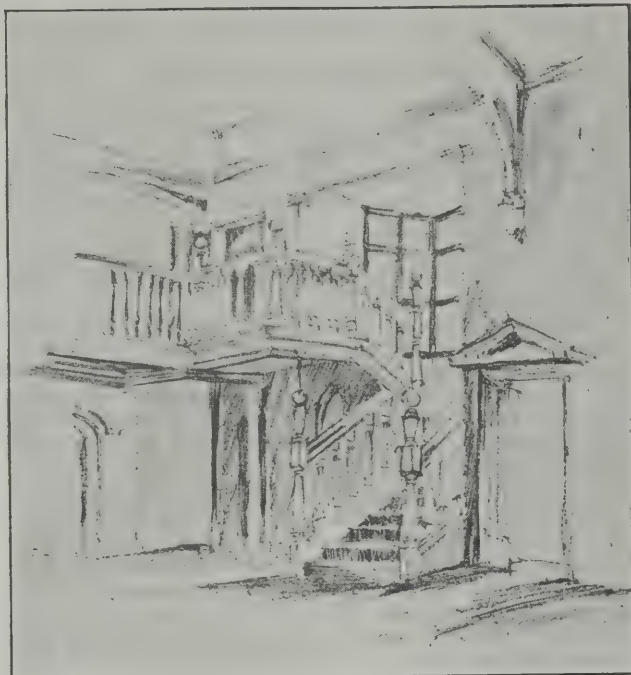


AT THE CHARTERHOUSE, LONDON.

From Mr. Henry Tanner's "English Interior Woodwork of the 16th, 17th, and 18th Centuries," by permission of the publisher, B. T. Batsford.)

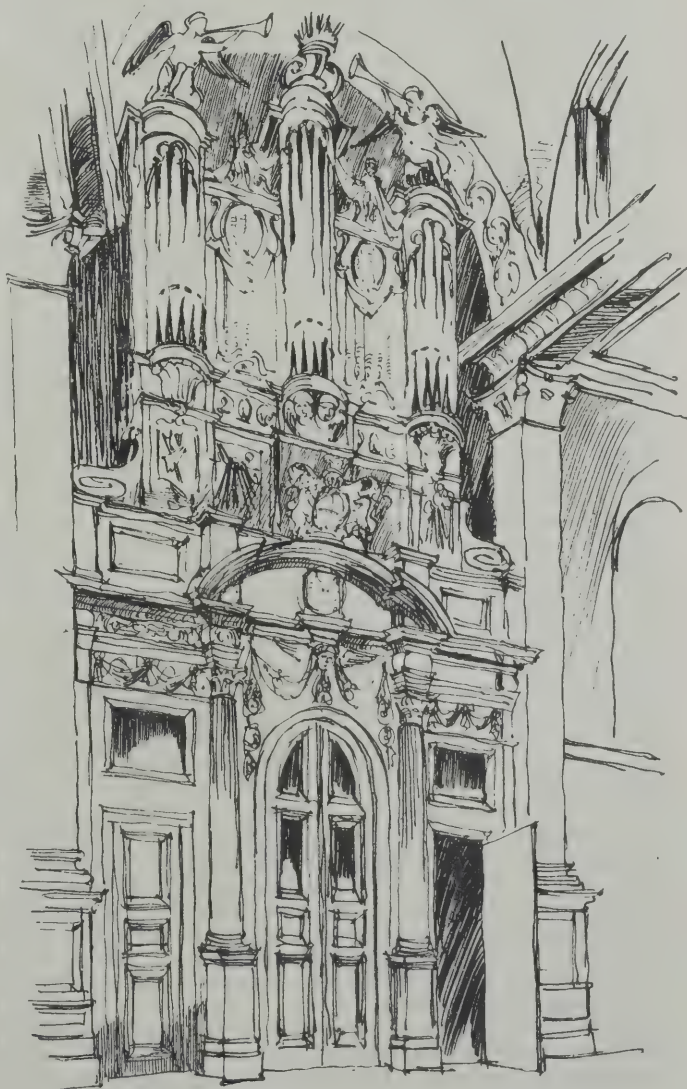


ORCH IN DRAWING ROOM, BROUGHTON CASTLE, BANBURY.
From Mr. Henry Tanner's "English Interior Woodwork of the 16th, 17th, and 18th Centuries," by permission of the publisher, B. T. Batsford.)



IN THE STRANGERS' HALL, NORWICH.

(From Mr. Henry Tanner's "English Interior Woodwork of the 16th, 17th, and 18th Centuries," by permission of the publisher, B. T. Batsford.)



AT ST. STEPHEN'S, WALBROOK, LONDON.

(From Mr. Henry Tanner's "English Interior Woodwork of the 16th, 17th, and 18th Centuries," by permission of the publisher, B. T. Batsford.)

IRON: ITS WORKER AND A PORTION OF HIS WORK.*

(Concluded from last week.)

Whether, as some say, the murderous effect of the Wars of the Roses was specially felt among England's smiths is difficult to decide, but the fact remains that the latter part of the fifteenth century and the first portion of the sixteenth were peculiarly barren of work of the kind under consideration.

We read that Henry VIII. imported smiths from Flanders, and the effect of their foreign ideas was certainly felt for some years later.

During Elizabeth's time wooden staircases were made a feature on most of the buildings then erected. These provided scope for the beautiful wrought-iron balusters and balustrades which began to be constructed somewhat later. We also have a few examples of outdoor work in gates, railings, &c., a fine specimen gate of about this period existing at Beddington House, Surrey.

Under the earlier Stuarts, scroll ironwork appears to have been almost neglected, and the Puritanical simplicity of the Commonwealth prevented the rapid contemporary advance then taking place in France and Germany making itself felt in our own country; but when the Restoration had become an accomplished fact, Charles II. among his various "King's officials" retained a "King's blacksmith and locksmith," one John Callendar, who from 1673-1676 devoted himself to ornamenting Holyrood Palace with specimens of his skill. Yet, although Charles employed Frenchmen to lay out his gardens, no trace of French influence in our ironwork shows itself until the accession of William and Mary in 1689.

Their Continental tastes, combined with the fact that Holland at the time was the haven of refugees from France in consequence of religious persecution, caused them to introduce men into England whose work at once created a fashion and a new style of art.

Daniel Marot, the architect and designer, and Jean Tijou, the skilled smith, were two of the leading men who were called here by the Royal couple, and Christopher Wren being then at the height of his career, both architecture and art received a great stimulus from their labours.

Wren commenced to rebuild Hampton Court, and Tijou was given various commissions for ironwork required there, being granted a free hand in order that he might produce the best that was in him. As a result of this Royal liberality, the period of about thirty years following 1690 has to its credit some of the finest ironwork the country has ever seen.

Wren, however, must not be allowed a false reputation for designing this work, as in no way does he show himself to have been a patron of artistry in iron. The strenuous work involved in the general designing of his cathedral and of fifty or so churches, all progressing at about the same time, probably precluded him from giving attention to detail work such as this.

It is to Jean Tijou himself that the designing of the work must be attributed, although he may have been influenced by Marot. Tijou could not have done much more than direct actual work, as the amount he accomplished was so extensive, and in connection with Hampton Court we come across the name of Huntington Shaw.

Certain authorities have given Shaw the credit of being entirely responsible for the work, basing their opinions on a presumably authentic statement in his epitaph in Hampton Church. This describes Shaw as "a smith of Nottingham," and says, "he was an artist in his way," "he designed and executed the ornamental ironwork at Hampton Court Palace."

Mr. Carraway Rice, in a paper to the *Archæological Journal* in June 1895, went deeply into this controversy, and proved satisfactorily that Shaw was not entitled to so much credit. He states that, after the fullest investigation, he failed to find Shaw's name in any official documents, but found, on the contrary, in the "List of Debts of the Office of Works, 1701," a statement that there was "due to John Tijou, smith, 1,982l. 0s. 7d., in respect of work executed at Hampton Court Gardens."

Then we have the evidence of Tijou's book. This volume of designs was probably the first book to be published dealing solely with ironwork. It is a set of engravings, issued in 1693, and a large number of the highly elaborate designs

are specified as "being for Hampton Court, of which the most part hath been wrought."

So perhaps Huntington Shaw was Tijou's foreman and did part of the practical work, as we know he had a workshop in Francis Street (now part of Regent Street) from 1700 to 1710, and may have worked for, and with, Tijou. It is a coincidence that the year of Shaw's death (1710) was also about the time of Tijou's retirement.

A quantity of Jean Tijou's work is at Chatsworth, and is also to be seen at St. Paul's Cathedral, where most of the panels, screens, choir gates, &c., are to his design, and were, no doubt, executed by English craftsmen, under his direction, as they bear a distinctly English stamp. Bills approaching 5,000l. were presented for this work alone. Parts of his St. Paul's work have been altered since, and some additions have been made, principally by Mr. Krall, of London.

Poor Jean, who had obtained most of his commissions through the Queen's influence, after devoting the best years of his life to the beautifying of some of our noblest buildings, fell out of favour at Court, and, in 1711 or thereabouts, he left the country, we are told, a poor man, allowing his wife to remain behind him to settle his affairs. From the time of his departure all trace of him seems to be lost.

Needless to say, such a master must have left behind him pupils and imitators, but it is strange that no subsequent work of his style appears in the Metropolis.

Robert Bakewell, a probable assistant of his, carried out work of the "Tijou style" in the Derby district. Tijou's designs, again, were probably the primary source from which the famous gates, railings, balusters, &c., at Drayton House, near Lowick, Northamptonshire, were elaborated. They have many of the characteristics peculiarly associated with Tijou's work, and though no mention has come down to us of the artificer, they were erected in 1700, when he was at the height of his fame.

But Tijou's influence was felt as much in the inspiring of other works as in creating a style.

Nicholas Hawksmoor, the church architect, for instance, was responsible for the design of some beautiful gates and screens to the choir at Beverley Minster (dated 1730), which, together with other masterpieces designed by him, may have been directly due to his coming into contact with Tijou's work in his capacity of Wren's clerk of works at St. Paul's Cathedral.

Contemporary with Tijou, but working entirely independently of him, was Thomas Robinson, whose forges were at Hyde Park Corner. In 1711 he erected the gates at New College, Oxford, and his style is essentially English as compared with the French-influenced style adopted by Tijou.

Also, in the records of Trinity College, Cambridge, is found the entry of payments amounting to 400l. for the iron gates, "paid to Mr. Partridge, the London smith," and dated 1691, but no further details of this craftsman are given.

In fact, a great part of the elaborate ironwork at the colleges of the Universities of Oxford and Cambridge dates from this period.

Of several of the fine works erected in the eighteenth century we cannot definitely state the authors, as with freer circulation of ideas came appropriation and adaptation of designs, and, consequently, it becomes more and more difficult to individualise styles.

Of the famous work at Carshalton Park and the grand gates in front of Devonshire House in Piccadilly we can do no more than suggest the authorship—Robinson, for instance, having been credited with the last-mentioned.

The eighteenth century also saw many beautiful examples of wrought ironwork being erected in our churches—chancel screens, altar rails, and some interesting smaller pieces, such as civic sword- and mace-rests, hat stands, &c. Three excellent specimens of these sword-rests are to be found in the church of All Hallows Barking, bearing the arms respectively of the Lord Mayors of 1726, 1755, and 1759.

We ought not to pass entirely without mention the very interesting tradesmen's signs belonging to this period, contemporary prints showing us to what a great extent they were used in the City; but the fashion for these did not last, though a revelation of their artistic beauty was effected by their temporary revival in Lombard Street as part of the street decorations celebrating King Edward VII's Coronation.

We have now reached a period—namely, the nineteenth century—when, the manufacture of wrought iron being a well-established art, we find its employment spreading into so many channels that a chronological history of its progress is well-nigh impossible, or, at any rate, lapses into mere generalisation.

* Read before the members of the Incorporated Clerks of Works Association on January 9 by A. Percy Witchell.

Special works of note and particular craftsmen will naturally stand out from the mass here and there; but to select or follow up a special line of investigation is beyond the scope of the concluding portion of a paper such as this.

During the last few decades, however, new ideas in constructive work of all kinds have rapidly been evolved, keeping pace with scientific progress, and the conveniences of modern life have brought with them new applications of the uses of wrought ironwork. Perhaps the most notable instance is to be found in the use of passenger lifts, which, with their requirements in the matter of well-enclosures, ornamental cages, and so forth, afford immense scope for the artistic employment of wrought iron.

Like every other art, wrought ironwork suffers from the vagaries of fashion and taste, and always that all-important factor, the leaning of the architect, enters into the scale.

The greatest drawback, however, of modern days is, without doubt, that fatal enemy of all art—financial competition. The real lover of his art to-day is seldom able to say to himself, "How can I make this work a thing of beauty and a lasting memorial to my skill?" but must, perforce, think "How can I conscientiously satisfy my customer for the money he will allow?"

In addition, he frequently has to pit himself against the "artist" (if such he can be called), who has a less exacting conscience, and has but one aim in view, the obtaining of work at no matter what price so long as he can make a profit and avoid having his productions condemned as being "impossible," which, from an artistic standpoint, they generally are. Such men should beware lest they eventually defeat their own ends by creating a revulsion of feeling in the matter of the artistic worth of wrought ironwork.

A severe competitor to wrought iron is still its "first cousin" cast iron. In the early part of the last century a wave of public taste in favour of this "poor relation" swept over the country, and we find even very large works being turned out by the foundry.

A good specimen exists in the gates closing the arch on Constitution Hill facing Hyde Park Corner. This arch will shortly be attracting attention by reason of the erection on its summit of a gigantic piece of bronze statuary, and details of the gates may not be uninteresting in this connection. They were cast by Bramah & Son, of London, in or about the year 1830, to the design of Mr. Hebblethwaite, at a cost of 5,712*l*. They measure 21 feet high by 16 feet 9 inches wide, and weigh nearly 7 tons.

With several large firms keeping a varied stock of cast iron, most of the cheapest modern railings, gates, and balconies are of this description, but wrought iron now holds its own in most cases where artistic effect is required, and the "nobler" metals such as bronze are not employed.

In conclusion, it is scarcely necessary to say that smith-craft has not—alone among the arts—been unaffected by science. With modern facilities, the smith can now produce results impossible in the time of his grandfather.

Could our ancestral craftsman return to his task to-day, what surprises would await him! He would find ready to hand, immense stocks of bar iron rolled to every conceivable section with almost mathematical accuracy. If he had secured a means of getting up-to-date in his markets, he would be shown, also, ready prepared lengths of ornamental mouldings, bars with decorated surfaces, bars so treated in rolling that, if his brain could accommodate itself to the bewildering changes it could split, twist, weld, and remodel them with comparatively little trouble into forms undreamt of. He would be introduced to ready-stamped leaves in multitudinous design, which, if he could be brought to do it, he might pass through the fire to add to them some of his own individuality before welding them to his bars. Then, for his final surprise, we would show him how, by means of the invisible electric current, his bars could be joined together "end on," or, if electricity were beyond him and he preferred to "see the heat," we would take a piece of iron and, melting it with a 6,000° Fahr. flame of oxy-acetylene gas, use it as a solder to join, say, a bar at right angles to a piece of plate, performing in a few seconds a feat which he would tell us was impossible and ridiculous.

And here, having traced in some measure the course by which the smith's art has reached its present high development, and having brought our imaginary smith from the scrap-heap of the past to look upon the results of his experience, accumulated through the centuries, we will leave him wondering what further surprises the future will have in store.

I must not conclude this paper without making grateful

acknowledgment to my friend, Mr. William Emmerson, for the benefit of his varied and practical experience, which I have received and which has been of great assistance to me.

THE EVOLUTION OF FIRE-RESISTING CONSTRUCTION.*

To the outside observer buildings are now erected—apart from questions of architectural style and taste—(or the absence of them) much as they used to be, but the professional man knows that, to employ a well-known expression, a "sort of" revolution has during the last fifty years or so taken place in fire-resisting building construction.

It has been truly said that there is nothing new under the sun, and I have little doubt that, if we could get at beginnings, we should find that Noah's Ark was not entirely free from some kind of metal, although we know that there was no necessity for protection from fire so far as that particular structure was concerned. There is a passage in Revelation which reads: "And he shall rule them with a rod of iron, as the vessels of a potter shall they be broken to shivers, even as I received of my Father." This, I think, shows clearly that iron rods were in existence in those days.

As early as 1835 we find Mr. George Godwin reading a Paper on the "Nature and Properties of Concrete," and on the architectural treatment of it. He showed how concrete had been used largely as a building material by all the principal civilised nations of antiquity; how Alberti had described walls made of it, nearly in the same way as is done now, by moulding it between boards; how Pliny had described cisterns made of it; and how many of our principal buildings, including St. Paul's and Westminster Abbey, stand upon concrete foundations dating from Roman and Saxon times.

One wonders what our cathedrals would be like if the twelfth and thirteenth-century cathedral architects had known the uses and value of steel. They knew the value of iron tie-rods, or we should not have so many as we have left to us of the beautiful monuments of their scientific and artistic achievements. The areas of the points of support and the buttress resistance to thrusts of roof and vault are light enough as they are, but these grand old constructors would have probably, to an even greater extent than they have, afforded ground for wonder and admiration. Their grouped shafts in nave and aisle might have, for aught we know, presented to the eye the naked steel, and we should have thereby lost the beauties of Purbeck marble and stone. Or they might have encased their skeletons in Purbeck or stone, and thus deceived the innocents abroad, much as they have been deceived by the subsequent discovery that what they had thought to be fine stone vaulting was really wood made to imitate stone. The Italians are past masters in the art of these deceptions.

Even the clever modern critic has been deceived over Crosby Hall, for after all the abuse of the "Vandals" who did not mind its destruction some of us know that most of the roof pinnacles, which were supposed to be oak, were really cast-iron grained to imitate that material, and that really very little of the old work remained. These pinnacles call to mind the caustic observation of Bismarck at the Berlin Conference that one of our statesmen was a "lath painted to look like iron."

We know what terrible adjectives have been hurled at the engineer and architect of the Tower Bridge because its skeleton steel work is encased in masonry, but I have always been at a loss to appreciate the adverse criticism. The majesty of their bridge has, to my mind, been vastly increased by this casing, and there is, I think, no more ground for adverse criticism of the bridge than there would be as regards the encasing of our own skeleton anatomy with human flesh.

Evolution is sometimes slow in its working, but the evolution of fire-resisting construction in our buildings cannot be said to be of prolonged growth. It was the knowledge and appreciation of the uses and value of concrete, as much as of the uses and value of steel, which gave rise to that impetus in their combined uses which has culminated in what we know as ferro, or reinforced concrete construction.

In 1854 architects were keenly discussing the construction of concrete floors, roofs, and walls, and their experiments led no doubt to a liking for the material as fire-resisting; as one which could carry very large unsupported areas, and which was cheap. There seems to have been at that time some difference of opinion as to the embedding of iron in the concrete, and as to its employment as a finished material in architectural decoration; but there does not appear to have been any

* A paper by Mr. William Woodward, F.R.I.B.A., read at the ordinary general meeting of the Surveyors' Institution on Monday, Feb. 6.

difference of opinion on the fact that concrete as a constructive material, whether with or without iron reinforcement, depends to a very large extent indeed upon the care with which it is mixed, and that no supervision can be too great to ensure strict compliance with this absolute condition.

Many years before 1854 Fox & Barrett's fire-resisting floors, and the various kinds of similar floors as regards fire, were in vogue, and such firms as Homan & Rodgers and Dennett & Ingle were paying great attention to this important subject of fire-resisting construction, and French architects and engineers especially were devoting their labours to the same end, and although the French methods differed from ours in detail, much the same ideas prevailed, except that the French construction was always much lighter than ours—they took greater risks, and yet I have not heard of a case of failure in Paris due to collapse of a floor by reason of insufficient strength per foot superficial.

I find an interesting statement made by Mr. Wyatt Papworth at a meeting of the R.I.B.A., in February, 1854, when the French and other methods of constructing iron floors were under discussion. An obelisk erected in 1776, on Putney Heath, by order of the Corporation of London, commemorated the satisfaction felt by committees of that body with experiments made in 1776, described in a pamphlet, printed in 1785, and entitled "An account of the invention and use of fire-plates for the security of buildings and ships against fire." The resistance to fire was accomplished by applying the fireplates above and below the timbers with dry sand or rubbish between them. A room was filled from floor to ceiling with faggots and pitch and tar, and the result seems to have been most satisfactory as a prevention from fire. The inventor's experiments, however, showed that "the only way to check a fire was to prevent the access of air; for flame would inevitably calcine such materials as concrete and plaster."

Fifty years ago, as some of us can remember, we knew very little indeed, comparatively, of concrete for constructional purposes, but architects were even at that period beginning to test and to study this form of construction. I have little doubt that we shall some day discover that the Egyptians knew all about ferro-concrete, and that the tomb of a departed Pharaoh owed its preservation to a mixture of iron and concrete. To prove that fifty years ago architects began to consider concrete construction I find that Mr. T. H. Lewis, on December 14, 1857, read a Paper at the Royal Institute of British Architects on some experiments upon concrete. Those experiments were directed to the suggested sensible loss in bulk of the ballast independently of that of the lime, and that the materials, after being mixed together, expand considerably. Mr. Lewis stated that this idea of loss of ballast was so prevalent that a respectable builder asked him to allow, in calculating the price of the concrete, one-seventh more ballast than the concrete cubed to. The general result of the experiments with lime concrete was "that the whole mass, made into concrete, occupied precisely the same space as the dry ballast, viz., one cubic yard, all the bulk of the lime and water (being about two-fifths of the ballast) being lost, but none of the ballast itself. The surface was carefully levelled and thin boards tacked over so as to ascertain if there were any expansion in the setting, but none could be perceived. The weight of the mass was 27 cwt."

Then on June 5, 1871, two Papers were read before the Royal Institute of British Architects, with Mr. Edward P. Anson (a Past-President of the Surveyors' Institution) in the chair. One Paper was on the use of Portland cement concrete as a building material, by Mr. Thomas H. Wonnacott, in which he speaks of the "novelty of the material." Mr. Wonnacott dealt with concrete in walls, and he opined that it was to a great extent incapable of artistic treatment, except at great cost, for moulds, patterns, &c., adding that he was persuaded that neither brick nor stone had anything to fear from competition with it. I am surprised to find Mr. Wonnacott stating he had not found that, although as he himself says, it may appear strange, "a larger proportion of cement than 1 in 8 increases the strength of the concrete. On the contrary, it appeared to diminish it." For ordinary walling Mr. Wonnacott found 1 in 10 sufficiently strong, and that "in engineering works in Copenhagen 20 to 1 was the proportion used," and further that he was informed by an experimenter that "he had gradually lessened the proportion of cement to 1 in 24, and found it then make fairly strong work. This proportion would rather startle the engineer and architect of to-day, and I am not surprised to find Mr. Wonnacott saying that in such a case the "conditions must have been exceptionally favourable," and the "dispersion of the cement among the mass perfect." This perfect dispersion of the cement I shall refer to later on when speaking of reinforced concrete.

(To be continued.)

CEMENT INDUSTRY IN GERMANY AND DENMARK.

H.M. CONSUL-GENERAL at Hamburg has furnished the following particulars relative to the cement industry of Germany:—

In the autumn of 1909 the German cement factories came to an agreement to raise the minimum prices of cement for export, but this agreement lasted for only a very short period, and export prices sank to their former level as soon as it became evident that the negotiations of the German groups in regard to the home trade would not lead to a satisfactory conclusion. In November, 1909, several of the German groups were dissolved, and this is said to have been the cause of much excited competition in Berlin, and large contracts were then made at prices equal to the cost of production. The Berlin group and the central German Union of Cement Factories were unable to agree owing to the exorbitant demands of the newly-founded factories. These circumstances, combined with the competition of Belgian cement in Westphalia and in the Rhine Province, led to a general reduction in prices. Then came the general strike in the building industry in the summer of 1910, and the results revealed by the reports of those works which closed their balances in June were far from satisfactory. On the other hand the export business has been brisk, especially during the last few months, but this activity has not been sufficient to relieve the factories of the large stocks which had accumulated, more especially in central Germany.

In spite of this unfavourable state of the industry, the number of new factories has still further increased, a circumstance which for a long time deferred the realisation of an agreement among the German groups. After protracted negotiations an agreement was reached in November, but a considerable number of the factories have not accepted it. The prospects for the year 1911 are not considered as encouraging, and the only favourable feature in the situation is thought to be that little money is available for the establishment of further new undertakings. The demand for cement, however, remains large, and is probably increasing, and as the cement trade abroad is also improving, it is hoped in Germany that an improvement may be anticipated towards the end of 1911.

The British Consul, in his report on the trade and commerce of Denmark in 1909, states that the Danish cement industry, which has now reached a high pitch of excellence, has been gradually built up during the last twenty years, often under considerable difficulties and without any support from the State in the shape of a protective duty, but, on the contrary, having to contend against keen competition from neighbouring countries, most of which are protected by high tariffs and formerly provided Denmark with a large proportion of the cement used. In the year 1889 the total production in Denmark was 115,000 barrels of Portland cement, the import being 135,000 barrels. In 1908 the total production reached 1,560,000 barrels, of which 380,000 barrels were exported. The import has decreased to less than 100,000 barrels per annum. A drawback to the success of the Danish cement trade lies in the circumstance that the country is devoid of water-power and coal, so that fuel, which forms so important a factor in this industry, has to be imported from abroad.

Until January 1, 1909, when the duty on coal was withdrawn, the cement manufacturer not only had to pay dearer for his fuel, but similar conditions prevailed in respect of materials for packing, such as staves for casks, iron hoops, and bags. On the other hand, foreign cement (packing included) has always been imported free of duty. In spite of these difficulties, the Danish cement industry has gained ground so rapidly that it is now able to compete with the industries of the neighbouring countries. This is mainly due to the advanced state of its technical development and the introduction of new and original labour-saving devices. The labour necessary within the factories has been reduced about one-sixth of what was formerly required. It may be justly claimed that the Danish cement industry to-day rests on a sound foundation. Its present capacity is about 2,600,000 barrels per annum, or considerably more than twice the consumption of the country. The balance of the production is sold for export, for which Denmark has favourable conditions, on account of her geographical position. The export takes place to Sweden, Norway, Germany, Russia, Finland, the United Kingdom, South America, South Africa, and East Asia.

THE Architect and Contract Reporter.

FRIDAY, FEBRUARY 17, 1911.

Published weekly, subscription 19s. per annum for Great Britain, and for Colonial and Foreign subscriptions £1 6s. 6d. All business communications to the Managing Director,

P. A. GILBERT WOOD,

Publishing Offices, 6-11 Imperial Buildings, Ludgate Circus, London, England.

Telephone No. 4725 Holborn.

Branch Offices at 43 OLD QUEEN STREET, S.W., Messrs. W. HAY FIELDING & CO. being the representatives for all business purposes.

The Birmingham Offices are at 102 COLMORE ROW.

. Entered in the United States of America as second-class matter.

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The International News Co., 5 Bream's Buildings, Chancery Lane, London, England, and New York.

AGENTS FOR CANADA:

Messrs. WM. DAWSON & SONS, Ltd., 91 Church Street, Toronto, to whom all correspondence for Subscription and Advertising Rates should be made.
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EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit the insertion of lengthy communications.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

. As great disappointment is frequently expressed at the nonappearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

ARGENTINE.—April 20.—A competition of plans for a hospital and school of medicine, to be erected at Rosario in celebration of the Argentine Centenary at a cost of about 149,000l. Prizes of 1,050l., 700l. and 440l. will be awarded. A copy of the conditions, &c., may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, London, E.C., where also a limited number of copies are available for distribution. Plans must be sent to the "Secretaria de la Comisión Pro-Hospital é Instituto de Enseñanza Médica del Centenario, Calle Córdoba 1230," Rosario.

ATHENS.—Aug. 21.—An international competition of plans is invited by the Greek Ministry of the Interior (Public Works) for the erection of a Court of Justice at Athens. The cost of the building must not exceed 160,000l. A first prize of 800l., and a second prize of 320l. will be awarded. The Greek Official Gazette, containing particulars (in Greek and in French) may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

BRADFORD.—May 1.—The Board of Management of the Bradford Infirmary invite plans with estimates for a new infirmary in Duckworth Lane. Mr. Keith D. Young, F.R.I.B.A., will act as assessor. Deposit 3l. 3s., which will be refunded on receipt of a bona-fide design or if block plan, instructions, &c., are returned within a month after receipt of replies to competitors' questions. The Secretary Superintendent of the Royal Infirmary, Bradford. (For further particulars see advertisement, January 13.)

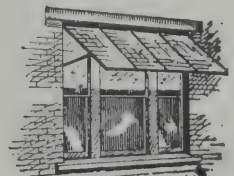
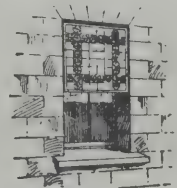
COVENTRY.—April 1.—The Corporation contemplate the erection of municipal offices in the centre of the city, and also possibly a town hall, and accordingly invite competitive designs. Mr. E. Guy Dawber, F.R.I.B.A., will act as assessor. Deposit 2l. 2s., which will be refunded on receipt

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of a bona-fide design or if the particulars are returned within fourteen days of receipt. Mr. Geo. Sutton, town clerk, 10 Hay Lane, Coventry. (For further particulars see advertisement, November 18.)

CUBA.—April 15.—An international competition has been arranged for a Presidential Palace to be erected at Havana at a cost of about 205,000l. Premiums of 10,000 pesos and 5,000 pesos will be awarded. Conditions may be seen at the Cuban Legation, 3 Grosvenor Mansions, Victoria Street, S.W., or the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

DUNFERMLINE.—The Carnegie Trust invite architects to furnish competitive designs for the erection of a Women's Institute. For conditions apply to the Secretary of the Carnegie Dunfermline Trust, Abbot Street, Dunfermline.

LOWESTOFT.—The Education Committee invite architects practising or residing in Norfolk and Suffolk to submit designs for an elementary school. Premiums of twenty, ten, and five guineas. Particulars may be had on payment of 5s. from Mr. R. Beattie Nicholson, town clerk, Town Hall, Lowestoft. For further particulars see advertisement, Feb. 10.

MANCHESTER.—March 31.—The Corporation invite designs for a Library and Art Gallery upon the Piccadilly site in the centre of the city. The Preliminary Competition closes March 31. The authors of ten selected designs will compete in the Final Competition. Mr. Reginald Blomfield, A.R.A., will act as assessor, in connection with the city architect. Apply for particulars to Mr. Thomas Hudson, Town Clerk, Town Hall, Manchester. (For further particulars see advertisement, January 6.)

ROCHDALE.—March 6.—The Guardians invite competitive plans for a home accommodating forty nurses. Apply to Mr. R. A. Leach, Union Clerk Rochdale.

ROMFORD.—The Town Planning and Modern House and Cottage Exhibition at Gidea Park, Squirrels Heath, in the Romford Garden Suburb, summer 1911. Class IV.—Town plan of Gidea Park—prizes of 100l. and 50l. Class VII.—Open to builders. For excellence of workmanship and construction in the erection of a cottage in Class I. or II.—first prize, gold medal and 100l.; second prize, 50l. Final dates for designs; Class IV., March 31, 1911. Mr. Michael Bunney, A.R.I.B.A., hon secretary, 33 Henrietta Street, Strand, W.C.

SOUTHAMPTON.—The Council of Hartley University College invite designs for the proposed new buildings. Mr. H. T. Hare, F.R.I.B.A., will act as assessor. The deposit of 1l. 1s. with the application will be returned if the conditions are returned within fourteen days. Mr. D. Kiddle, registrar, Hartley University College, Southampton.

SOUTH MOOR.—March 15.—Competitive designs are invited for parochial hall and institute at St. George's Church, South Moor. Cost not to exceed 1,500l. Premiums of 15l. and 5l. will be awarded. Particulars from Rev. F. S. Myers, South Moor, Stanley, S.O., Durham.

ST. AUSTELL.—Feb. 25.—The committee invite architects practising in the county of Cornwall to submit designs for a cottage hospital, to be erected on the Trewoon Road. The estimated cost must not exceed 1,500l. Three premiums, viz., 12l. 12s., 8l. 8s., and 5l. 5s., are offered. Apply to Mr. H. Hodge, C.C., Trevarrick, St. Austell, Cornwall.

SWINTON.—The Vicar and Churchwardens of Swinton (Rotherham) invite plans, &c., for erection of a parish hall and other buildings. Full particulars on application to Rev. C. Steele, Swinton Vicarage, Rotherham.

CONTRACTS OPEN.

ACCRINGTON.—Feb. 28.—For various trades required in erection of New Jerusalem Church, Spring Hill. Deposit 1l. Mr. F. Harrison, architect, 30 Willow Street, Accrington.

ADWICK-LE-STREET.—Feb. 23.—For the following works:—Adwick-le-Street, Woodlands new school—caretaker's house (builder, joiner, tiler, plumber, plasterer, and painter), for the West Riding Education Committee. The Education Architect, County Hall, Wakefield. Send 1l. deposit to the West Riding Treasurer, County Hall, Wakefield.

BARROW-IN-FURNESS.—Feb. 20.—For erection of two shops at the corner of Victoria Road and Oxford Street for the Barrow Co-operative Society, Ltd. Mr. Henry T. Fowler, A.R.I.B.A., 6 Cornwallis Street, Barrow.

BATH.—Feb. 25.—For the erection of engine-house, suction gas-house, and other appurtenant works, in Midland Road, Twerton. Deposit 2l. 2s. Mr. W. H. Radford, C.E., Albion Chambers, King Street, Nottingham, and the City Surveyor's Office, Guildhall, Bath.

BELFAST.—March 1.—For erection of new hospital in Templemore Avenue, for the Board of Management of the Ulster Hospital for Children and Women. Messrs. Watt, Tulloch & Fitzsimons, architects, 77a Victoria Street, Belfast.

BILLINGE.—March 2.—For the removal and erection of a building for phthisis cases in the grounds of the workhouse infirmary at Billinge, near Wigan. Messrs. W. C. Ralph & Son architects, Leader's-buildings, King-street, Wigan.

BIRSTALL.—For the conversion of house in Low Lane into a tailor's shop, for the Birstall Industrial Co-operative Society. Mr. J. W. Burrows, architect, Huddersfield Road, Birstall, Yorks.

BLYTH.—March 2.—For the erection of Blyth New Post Office. Deposit 1l. 1s. The Postmaster, Head Post Office, Newcastle-on-Tyne, or H.M. Office of Works, Storey's Gate, London, S.W.

CHELTENHAM.—Feb. 22.—For the building of a small lavatory wing at the Workhouse. The Master at the Workhouse, Cheltenham.

DALTON.—Feb. 22.—For erection of two semi-detached houses in Long Lane, Dalton, Huddersfield. Mr. J. Berry, architect and surveyor, 3 Market Place, Huddersfield.

DERBY.—Feb. 20.—For erection of a corn mill, St. Michael's Lane, for the Corporation. Deposit 1l. 1s. Mr. John Ward, M.I.C.E., borough surveyor, Babington Lane, Derby.

DUBLIN.—Feb. 22.—For building alterations &c., at the nurses' home in the workhouse, for the Guardians of South Dublin Union. Mr. Francis Bergin, B.E., architect, 31 Westmoreland Street, Dublin.

EDINBURGH.—Feb. 28.—For the following works in connection with alterations to be carried out at 41 Lauriston Place, for the Edinburgh School Board, viz. (1) mason, brick, carpenter, joiner and plaster work, (2) plumber work, (3) painter work, (4) electric lighting. Mr. J. W. Peck, clerk, School Board Offices, Castle Terrace, Edinburgh.

EDINBURGH.—March 6.—For the several works required in the erection of the Usher Hall on site at Lothian Road, for the Corporation. The works for which tenders are invited consist of demolition of old buildings, mason and brick work, carpenter and joiner work, smith work, plumber work, plaster and concrete work, glazier work, tile-layer work, roof asphalt work, painter work, electric lighting. Messrs. Stockdale, Harrison & Sons & Thomson, architects, 7 St. Martin's East, Leicester. Deposit 2l. 2s. for each schedule. Mr. J. A. Williamson, A.R.I.B.A., city superintendent of works, City Chambers, Edinburgh.

ESCLUSHAM.—Feb. 28.—For alterations and repairs to Esclusham Church schools, near Wrexham. Rev. J. E. Tompson, Esclusham Vicarage.

FALMOUTH.—Feb. 24.—For erection of an operating theatre at the Falmouth Hospital. Mr. E. P. Skinner, Municipal Buildings, Falmouth.

GLOUCESTER.—Feb. 20.—For the following works, for the Gloucestershire Territorial Force Association:—(1) Erection of a drill hall and other buildings; also alterations to present premises, at Colston Fort, for the Royal Army Medical Corps. (2) Erection of a riding school. Deposit 2l. Mr. J. Craik, architect, Oxford Chambers, 12 St. Stephen's Street, Bristol.

GOLBORNE.—Feb. 27.—For erection of an elementary school at Golborne, near Wigan, to accommodate 474 scholars. Deposit 2l. Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

HALIFAX.—Feb. 28.—For the various works required in the extension of Albert Foundry, at Highroad Well. Messrs. Jackson & Fox, architects, Rawson Street, Halifax.

HARROGATE.—Feb. 24.—For erection of a chapel for the Woodard Society Girls' School. Mr. R. F. Pawsey, 8 Regent Street, Barnsley.

HAVERSHAM.—Feb. 23.—For erection of cottages and farm buildings, alterations and adaptation of buildings at Pike's Farm. The Small Holdings Office, County Hall, Aylesbury, Bucks.

HETTON-LE-HOLE.—Feb. 24.—For the erection of a public urinal in Front Street. Mr. John Harding, surveyor, Council Chambers, Hetton-le-Hole.

HOLDEN.—Feb. 28.—For erection of caretaker's house, miners' hall and literary institute. Deposit 3l. Mr. James Hamilton, architect, Horden, Sunderland.

IRELAND.—March 1.—For building dwelling-house at Killane, near Castletown. Mr. Patrick Menton, architect, Newtown Moate.

LIVERPOOL.—Feb. 22.—For the erection of a church hall and home for sick nurses at Mill Road Infirmary (Local contractors only). Deposit 2l. 2s. Mr. C. H. Lancaster, architect Brougham Terrace, West Derby Road, Liverpool.

KNOTTINGLEY.—Feb. 21.—For the whole of the work in erection of 14 houses at Knottingley, Yorks. Mr. W. J. Tennant, architect and surveyor, Pontefract.

LEEDS.—Feb. 22.—For the following works, for the Property Committee:—(1) Alterations and repairs to interior of Corporation Hotel, (2) painting and decorating interior of Corporation Hotel, Camp Road. Mr. W. T. Lancashire, city engineer, Municipal Buildings, Leeds.

LEIGH-ON-SEA.—Feb. 18.—For erection of public offices and fire station on the site acquired in Elm Road. Forward names and 5*l.* 5*s.* deposit to Mr. F. P. Wheatley Down, clerk, Council Offices, Leigh-on-Sea, Essex.

LONDON.—The Commissioners of H.M. Works and Public Buildings invite tenders for the execution of maintenance work to the buildings in their charge in London (South District) for a period of three years from April 1, 1911. Deposit 1*l.* 1*s.* Make early application to H. M. Office of Works, &c., Storey's Gate, Westminster.

LONDON.—The Commissioners of H.M. Works and Public Buildings invite tenders for the execution of maintenance work to the buildings in their charge in London (North District) for a period of three years from April 1, 1911. Deposit 1*l.* 1*s.* Make early application to H.M. Office of Works, &c., Storey's Gate, Westminster.

LONDON.—Feb. 21.—For the construction of an underground convenience in St. James' place, Aldgate. Deposit 2*l.* 2*s.* The Engineer Public Health Department, Guildhall, E.C.

LONDON.—Feb. 21.—For the execution of certain work in connection with the provision of extra lavatory accommodation at their school, Elder Road, West Norwood, S.E., for the Lambeth Board of Guardians. Mr. James L. Goldspink, clerk, Brook Street, Kennington Road, S.E. Deposit 2*l.*

LONDON.—Feb. 23.—For slating the roof of a shed at the Council's Depot, Fenwick Place, Landor Road, Stockwell, S.W., for the Lambeth Borough Council. Deposit 1*l.* 1*s.* Mr. Henry Edwards, C.E., borough engineer, Lambeth Town Hall, Brixton Hill, London, S.W.

LONGWOOD.—Feb. 22.—For the various works required in erection of a dwelling-house, Birks Road, Longwood, Yorks. Messrs. Lunn & Kaye, architects and surveyors, Milnsbridge and Huddersfield.

MAIDSTONE.—Feb. 21.—For certain drainage work and new baths for the Corporation. Mr. T. F. Bunting, borough surveyor, Fair Meadow, Maidstone.

MANCHESTER.—Feb. 25.—For erection of the Atherton Street Municipal school, Deansgate. Deposit 2*l.* 2*s.* The Accountant, Education Offices, Deansgate, Manchester.

MANCHESTER.—Feb. 25.—For supply of red terra-cotta for the new Atherton Street Municipal school, Deansgate. Deposit 1*l.* 1*s.* The Accountant, Education Offices, Deansgate, Manchester.

NUNEATON.—Feb. 18.—For erection of infant Council school at Stockingford. Send names to Mr. Harry Quick, architect, Market Place, Nuneaton.

PAISLEY.—Feb. 24.—For the following works of the new school for the special classes at Renfrew Road, viz.:—(1) Wall tiling work, (2) steel work. Messrs. J. Craig Barr & Cook, architects, 5 Gilmour Street, Paisley.

PORTSMOUTH.—Feb. 22.—For erection and completion of additional wards for male and female patients at the Workhouse Infirmary, Portsmouth, for the provision of accommodation for 465 patients, together with covered ways, operating theatre, &c. Send names and 3*l.* 3*s.* deposit by Feb. 22 to Mr. S. E. Smith, architect, 145 Victoria Road North, Portsmouth.

PROSPECT.—Feb. 25.—For erection of a new P.M. chapel at Prospect, near Carlisle. Mr. Wilk Serginson, architect, Prospect, Bullgill, Carlisle.

REDCAR.—Feb. 21.—For the erection of a fire station at the Store Yard in Pierson Street. Mr. James Howcroft, the surveyor, the Council Offices, 2 West Terrace, Redcar.

ROCHDALE.—Feb. 21.—For the construction of a portable bandstand for Falinge Park. Mr. S. S. Platt, borough surveyor, Town Hall, Rochdale.

SCOTLAND.—Feb. 27.—For the construction of a concrete roof supported on brick pillars, with alternative offer for ferro-concrete work, at Lawton Reservoir. Deposit 2*l.* 2*s.* Mr. George Baxter, engineer and manager, Water Engineer's Office, 93, Commercial Street, Dundee.

SEVENOAKS.—March 3.—For erection of Sevenoaks new telephone exchange, for the Commissioners of H.M. Works and Public Buildings. Deposit 1*l.* 1*s.* The Postmaster, Post Office, Sevenoaks, Kent. H.M. Office of Works, Storey's Gate, London, S.W.

SOUTH ELMSALL (YORKS.).—Feb. 23.—For the works (whole tenders) necessary in erection of proposed P.M. church and

school, South Elmsall, Yorks. Deposit 2*l.* 2*s.* Mr. J. W. Winter, architect, St. Peter's Close, Sheffield.

SOUTH NORMANTON.—March 6.—For erection of two cottages. Deposit 1*l.* 1*s.* Mr. John Tomlinson, architect, South Normanton.

SPITTALL.—Feb. 27.—For erection of a rocket life-saving apparatus house at Spittall, Northumberland. H.M. Coast Guard Station, Berwick.

STAINLAND.—Feb. 25.—For the various trades required in erection of a farm house and dairy, at Manor House Farm, Stainland, Yorks. Messrs. Chas. F. L. Horsfall & Son, architects and surveyors, Lord Street Chambers, Halifax.

SWAYTHLING.—March 6.—For erection of a cookery room at Swaythling Council school, Hants. Deposit 10*s.* Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

TEWKESBURY.—March 6.—For the construction of an outside iron fire escape and alterations at the Workhouse. Mr. H. A. Badham, clerk to the Guardians, Tewkesbury.

WALES.—Feb. 18.—For erection of model lodging house at Ammanford. Send names and 2*l.* 2*s.* deposit by Feb. 18 to Mr. David Thomas, M.I.M.E., Quay Street, Ammanford.

WALES.—Feb. 20.—For erection and completion of 14 houses at Aberkenfig, for the Pandy Estate Building Club. Mr. F. W. Burnett, architect and surveyor, Tondy, Glam.

WALES.—Feb. 21.—For erection of a urinal at Bank Place, Bangor. Mr. John Gill, A.M.I.C.E., city surveyor, Town Hall, Bangor.

WALES.—Feb. 21.—For erection of 36 houses on the Woodbine Estate, Blackwood. Mr. Ralph Simmonds, architect and surveyor, High Street, Blackwood, Mon.

WALES.—March 13.—For extensions at the Brynmawr County Schools. Deposit 2*l.* 2*s.* Mr. F. R. Bates, architect, 26 Westgate Chambers, Newport, Mon.

WALES.—Feb. 23.—For the supply, delivery, and erection in situ at the King's Dock, Swansea, of one framed and braced steel single-storeyed transit shed, 250 ft. by 70 ft., sides and roof (which is to be in one span) to be covered with galvanised corrugated iron, for the Harbour Trustees. Deposit 5*l.* 5*s.* Mr. Talfourd Strick, clerk, Harbour Offices, Swansea.

WALES.—Feb. 24.—For the following works, for the Merthyr Tydfil Education Committee:—Erection of assistant teachers' room and teachers' lavatory at the Intermediate school, Merthyr. Mr. E. Stephens, clerk to the Education Committee.

WALES.—Feb. 27.—For the erection of a training college for women at Barry, for the Glamorgan County Council. The Barry Docks Police Station, and the Glamorgan County Council Offices, Westgate Street, Cardiff.

WALES.—Feb. 27.—For erection of drill hall and caretaker's quarters at Aberdare, for the Glamorgan Territorial Force Association. Messrs. A. O. Evans, Williams & Evans, architects, Post Office Chambers, Pontypridd.

WALES.—March 4.—For building a farm house at Blannfflyman, in the Parish of Mount, near Cardigan. Mr. J. Evans, Tre-faesfawr, Beulah, R.S.O., Cardiganshire.

WHITLEY.—Feb. 27.—For the following works for the Whitley and Monkseaton Urban District Council, Northumberland, viz.: (1) construction of public conveniences at the rear of the Council Offices, Front Street, Whitley Bay; (2) private improvement works in Pykerley Lane. Mr. A. J. Rousell, A.M.I.C.E., surveyor, Council Offices, Whitley Bay.

WHITEFIELD.—March 2.—For erection of a secondary and art school at Whitefield, Lancs., for the Governors of Stand Grammar School. Deposit 3*l.* Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

WHIXLEY.—Feb. 20.—For the erection of farmstead at Whixley, near York (builder, joiner, tiler, plumber, painter). Send 1*l.* deposit to the West Riding Treasurer, County Hall, Wakefield. The West Riding Treasurer, County Hall, Wakefield.

WOKING.—Feb. 22.—For the construction of an underground sanitary convenience near to the Victoria Arch, Woking Station. Deposit 1*l.* 1*s.* Mr. G. J. Wooldridge, surveyor, Council Chambers, Woking.

WORKSOP.—March 1.—For new church, Worksop, Not (whole or separate trades). Messrs. Hodding & Co., solicitors, Worksop, and Messrs. Austin & Paley, architects, Lancaster.

WINSOMBE.—Feb. 20.—For alterations and additions to the Baptist and Congregational Chapel. Deposit 2*l.* 2*s.* Mr. A. Harford, architect, 38a Park Street, Bristol.

It is understood that arrangements are well in hand for the erection of a large theatre in Leeds on a vacant plot of land in City Square, between Wellington Street and Quebec Street. The proposal is to provide accommodation for 2,000 people.

TENDERS.

CARSHALTON.

For the erection of verandahs at the Children's Infirmary, also greenhouse, &c., for the Metropolitan Asylums Board. Mr. W. T. HATCH, M.Inst.C.E., M.I.Mech.E., Engineer-in-Chief.

Hayward Bros. & Eckstein, Ltd.	£2,060	0	0
General Iron Foundry Co., Ltd.	1,966	0	0
Cook	1,798	0	0
Heywood & Co.	1,740	6	0
Wenham & Waters, Ltd.	1,698	10	0
Freeman, Ltd.	1,625	0	0
HONOUR, Warlingham (accepted).	1,569	0	0

CATERHAM VALLEY.

For erection of Council offices and hall. Mr. H. R. MARTIN, surveyor, Caterham Valley, Surrey.

Midmer, Ltd.	£4,390	0	0
Martin	4,375	0	0
Fitch & Cox	4,369	0	0
Freeman	4,150	16	11
Worsel	4,040	0	0
Drowley & Co.	4,001	0	0
Risby & Michell	3,997	10	0
Thompson Bros.	3,997	0	0
J. & M. Patrick	3,996	0	0
A. B. Cook	3,995	0	0
Renshaw	3,993	0	0
F. & G. Foster	3,942	0	0
W. Smith & Sons	3,924	0	0
Barker	3,920	0	0
Quittenton	3,899	0	0
J. Smith & Sons	3,870	0	0
Wright	3,858	0	0
Clarke	3,839	0	0
Norris	3,807	0	0
Gathercole Bros.	3,800	0	0
Gorham	3,799	1	6
Longley & Co.	3,789	0	0
Ramsbotham	3,740	0	0
Cook & Son	3,715	0	0
Nightingale	3,713	0	0
BATLEY, SON & HOLNESS, London (accepted)	3,693	0	0
Honour	3,659	10	0

HARROW.

For additions and alterations to Frosbury, Northwick Park. Mr. E. A. CROOKE, A.R.I.B.A., architect, Harrow.

Young	£319	19	9
Watts	285	0	0
Simmons	248	0	0
Pickrill	225	0	0
WILSON, Sudbury, Middlesex (accepted)	216	7	6

LEYTONSTONE.

For the heating and electric wiring at the County High School for Girls. Messrs. WILLIAM & JOHN H. JACQUES, architects, 2 Fen Court, E.C.

Heating Apparatus.

Werner, Pfeleiderer & Perkins	£975	0	0
Russell & Co.	775	0	0
Barnards, Ltd.	709	0	0
Haden & Sons	686	0	0
Halsey	678	0	0
Korting Bros.	667	0	0
Easton Lift Co.	660	0	0
Freer	649	0	0
Nicholson & Co.	631	0	0
Wenham & Waters	619	0	0
Dinning & Cooke	607	0	0
General Iron Foundry Co.	596	0	0
Duncan, Watson & Co.	595	0	0
Wembley Heating Co.	564	0	0
Clark, Hunt & Co.	562	0	0
Macintosh & Sons	532	10	0
Davies	497	0	0
Canon & Hefford	495	0	0
Watkin & Son (recommended)	469	0	0

Electric Wiring.

Halsey (recommended)	425	2	3
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HULL.

For the erection of the Presbyterian Schools, Anlaby Road, Hull. Mr. T. BROWNLOW THOMPSON, architect, Hull.

Knowles	£2,819	0	0
Hill & Stephenson	2,801	12	0
Railton	2,750	0	0
Marsden & Son	2,745	0	0
Levitt	2,730	10	0
J. Houlton & Son	2,640	0	0
G. Houlton & Son	2,640	0	0
Harper	2,606	0	0
Bilton	2,597	1	11
Fenwick & Son	2,592	0	0
Taylor & Son	2,583	0	0
QUIBELL SON & GREENWOOD (accepted)	2,552	0	0

All of Hull.

LONDON.

For the erection of sanitary conveniences in Victoria Dock Road, for the West Ham Borough Council. Mr. JOHN S. MORLEY, borough surveyor.

Nightingale	£800	0	0
Doulton & Co.	627	0	0
Burns & Co.	600	0	0
Thomas & Edge	598	0	0
Webb & Co.	597	0	0
Mason & Co.	580	0	0
Luton	547	0	0
Jerram	537	0	0
Woollaston & Co.	529	0	0
Newell & Lusty	524	0	0
Roberts & Co.	520	0	0
Wood Bros.	498	0	0
Symes	497	0	0
Horswill	456	0	0
Lown & Co.	449	10	0
WEBB, Stratford (accepted)	429	0	0

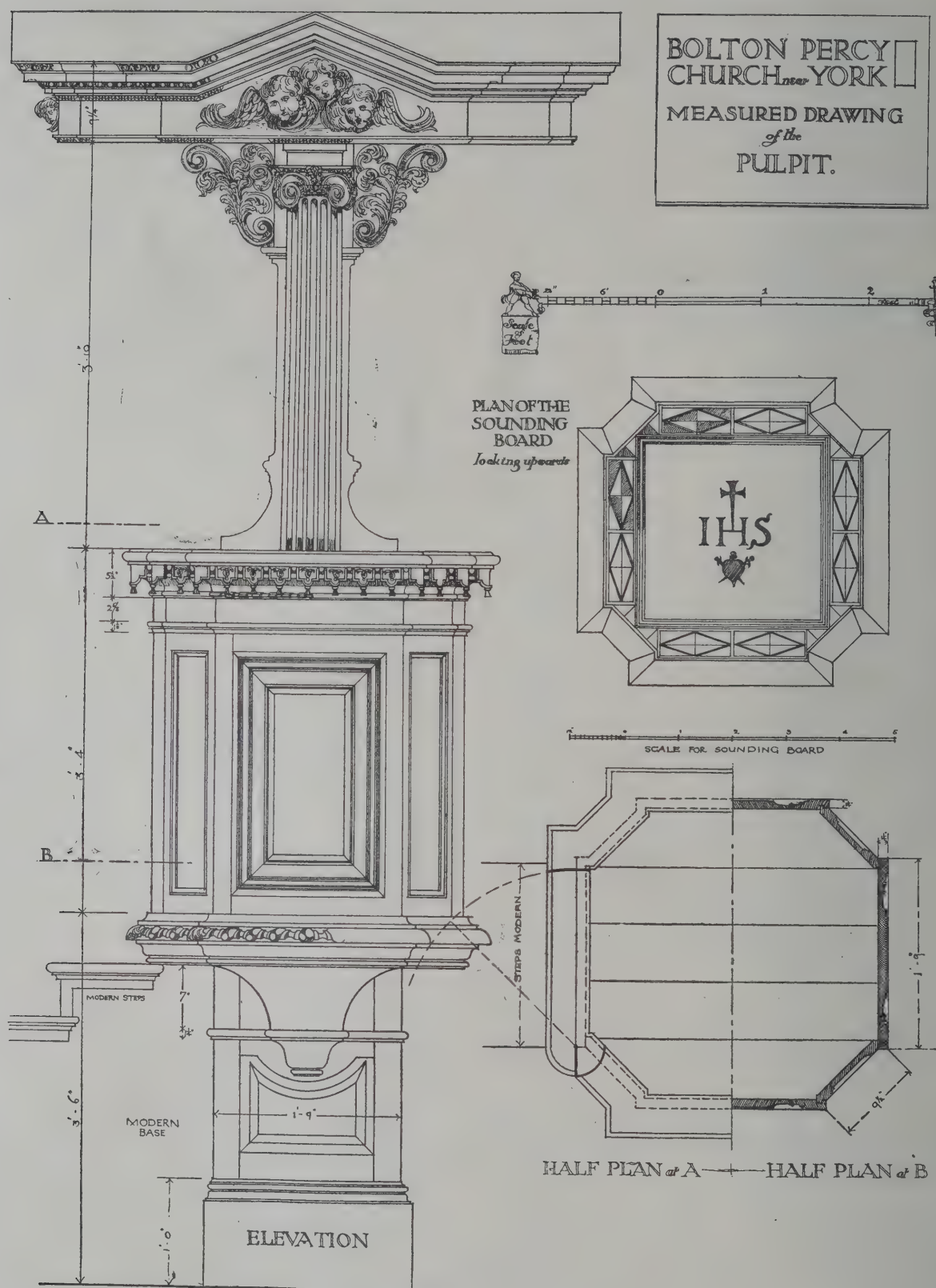
For supply and erection of two external iron fire escape staircases, and formation of exit doors at the Children's Infirmary, Crown Hill, Upper Norwood, S.E., for the Lambeth Guardians.

J. & J. Hall	£243	0	0
Elwell, Ltd.	190	0	0
Wilmer & Sons	185	0	0
Lift and Hoist Co.	180	0	0
Falkirk Iron Co.	174	0	0
Carron Co.	169	12	0
McDowall, Stephen & Co.	168	17	0
Moorwood, Sons & Co.	168	10	0
Aston & Son	167	0	0
Stone	162	12	6
Jones & Co.	160	0	0
Standard Steel Co.	157	5	6
Albion Iron Co.	151	5	0
Neale, Watkins & Hall & Hall	149	15	0
Hayward Bros. & Eckstein	148	17	6
St. Pancras Ironwork Co.	142	0	0
Wenham & Waters	139	0	0
Lown & Co.	136	18	1
Lockerbie & Wilkinson	135	7	0
Cooper & Co.	134	15	0
General Iron Foundry Co.	134	0	0
H. & C. Davis & Co.	132	17	6
Safety Tread Syndicate	132	0	0
HERRING & SONS, Chertsey (accepted)	125	0	0

For the erection of fencing between Norwood Park and the West Norwood allotments estate.

The Economic Fencing Company	£420	0	0
Batcheller	390	11	7
Brooker	388	0	0
Davis & Co.	379	0	0
Turner & Son	375	2	0
Clift & Son	375	0	0
White	359	0	0
Elliott & Son	359	0	0
Horton & Son	353	0	0
Rowland Bros.	335	0	0
Marshall	334	0	0
John Stenning & Son	325	0	0
W. Stenning & Son	322	18	6
J. & S. Agate, Horsham (recommended)	314	9	9
Estimate of the chief officer parks department	420	0	0

"THE ARCHITECT" STUDENTS' SKETCHING AND MEASURING CLUB.



From a Drawing by "LE QUAYT."

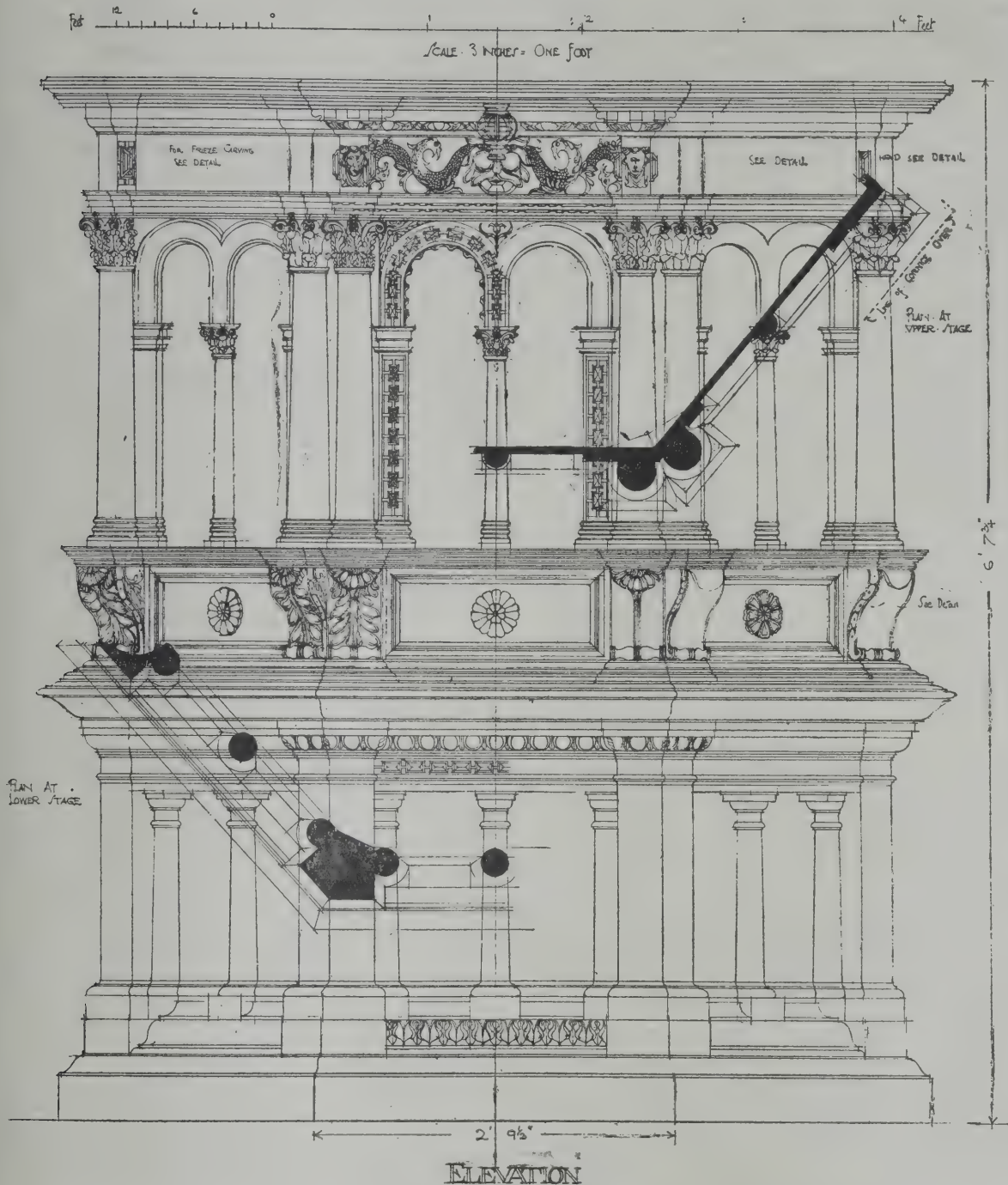
PULPIT IN BOLTON PERCY CHURCH, YORKSHIRE.

BOLTON PERCY Church, of Perpendicular date, contains two pulpits, one of Elizabethan times and the other, the subject of the accompanying illustration, erected in the eighteenth century. Five years ago it stood in the centre of the nave, but recently, when the pews were rearranged, it was removed to the south-east respond to the chancel arch. It is a beautiful example of church furniture, fine in proportion, with good mouldings and enrichment, and the carving of the pilaster brackets, the Ionic capital, and the angels' heads

in the pediments is superb. The pulpit is of finely-figured English oak with bog oak and boxwood inlay to the panels and on the soffit of the sounding board. The base and the steps with handrail are modern.

THE committee of the South Shields Queen Victoria Memorial Fund have accepted the model submitted by Mr. Albert Toft, sculptor. The cost will be 1,000*l*. The late Queen's statue of bronze will be nine feet in height upon a pedestal of Aberdeen granite twelve feet in height, and will stand in front of the Municipal Buildings.

"THE ARCHITECT" STUDENTS' SKETCHING AND MEASURING CLUB,
17TH CENT^Y PULPIT IN S. JOHN'S CHURCH NEWCASTLE-ON-TYNE



From a Drawing by "SANS PEUR."

SEVENTEENTH-CENTURY PULPIT IN ST. JOHN'S CHURCH, NEWCASTLE-ON-TYNE.

This is an excellent example of Renaissance woodwork. The design is thoroughly Classic and forms an interesting study of the orders. The pulpit is of two stages—the base being treated with the Tuscan order and the second stage with the Corinthian, the detail being quite good and refined in each case. The upper portion is panelled and treated with a smaller Corinthian order with curious pilasters at each side to receive a stilted arch. The cusping is curious and rather quaint when compared with Gothic cusping. The church itself is in the heart of the city and has work of the twelfth, thirteenth and fourteenth centuries in it. It is cruciform in shape with a pinnacled tower over the baptistery at the west end. Lately it has had a new organ case added, from the design of Sir Charles Nicholson, also clergy desks, and an

interesting reredos, mediæval in character, coloured and gilded, which adds greatly to the charm of the church.

MESSRS. HOMER & LUCAS, architects, 35 Bucklersbury, London, E.C., and Oxford, have prepared plans for the projected Cinematograph Theatre at Oxford. The contractors are Messrs. Kingler & Sons, of Oxford.

MR. JAMES MILLER, A.R.S.A., architect, Glasgow, has been invited by the Clydebank Town Council to advise them in the proposed competition for a Carnegie Library. The question whether the competition be an open or limited one will be decided by Mr. Miller.

THE final voting returns on the question of the Amalgamated Carpenters and Joiners continuing their connection with the Trade Union Congress show a majority in favour of separation. The figures were:—For separation, 7,124; against, 6,137; majority, 987.

LONDON—continued.

For the erection of a section house at Blackheath Road, Greenwich. Mr. J. DIXON BUTLER, F.R.I.B.A., Surveyor to the Metropolitan Police District, New Scotland Yard, S.W.

Kent	£8,630	0	0
Graham & Co.	8,240	0	0
Blake	8,065	0	0
Thomas & Edge	8,046	0	0
Blay	7,910	0	0
Wallis & Sons.	7,861	0	0
Lovatt	7,711	0	0
Smith & Sons	7,670	0	0
Fairhead & Son	7,660	0	0
Lawrence & Son	7,642	0	0
Mowlem & Co.	7,614	0	0
Godson & Sons	7,598	0	0
Grover & Son	7,588	0	0
Holliday & Greenwood	7,584	0	0
Patman & Fotheringham	7,473	0	0

For the heating work in connection with the structural improvement of the Moreland Street school, Finsbury.

Stevens & Sons	£1,000	0	0
Grundy	867	0	0
Cannon & Sons	752	0	0
Brightside Foundry and Engineering Co.	725	0	0
T. S. Knight & Sons	690	0	0
J. & F. May	685	0	0
G. & E. Bradley	677	0	0
Cannon & Hefford	659	15	0
J. F. Phillips & Son, 21 Old Queen Street, W.			

(recommended)

For the construction of switch galleries at the Camberwell and New Cross sub-stations, for the L.C.C.

Rowley Bros.	£908	0	0
J. & C. Bowyer	845	0	0
Wall	804	0	0
Holloway	774	0	0
Munday & Sons, Botolph Lane, E.C. (recommended)	687	0	0
Architect's estimate	800	0	0

NORWICH.

For addition and alterations to drapery shop, 21 St. Benedicts Street. Mr. ARTHUR J. CHAMBERS, architect and surveyor, Norwich.

Johnson	£600	0	0
Hawes & Sons	597	0	0
Gill & Son	578	0	0
Daws & Son	548	0	0
J. S. SMITH, Norwich (accepted)	544	0	0

REIGATE.

For alterations and additions to the Coppice, Colley Lane, Reigate, for Mr. J. T. Hollow. Mr. BLUNDEN SHADBOLT, architect, Horley, Surrey.

E. E. MITCHELL, Horley (accepted) £217 0 0

TYLORSTOWN.

For the erection of a residence. Messrs. A. O. EVANS, WILLIAMS, & EVANS, architects, Pontypriid.

Evans	£1,547	0	0
Niblett & Davies	1,490	11	0
Richards	1,475	11	4
HUMPHREYS, Tylorstown (accepted)	1,460	0	0

YORK.

For the erection of stores in Railway Street, for the York Equitable Industrial Society, Ltd. Mr. H. B. BECK, architect, Doncaster.

Martin	£17,962	0	0
Airey & Son	16,947	16	0
Parker & Sharp	16,465	9	0
Arnold & Son	15,990	0	0
Shepherd & Son	15,912	17	0
Bellerby	15,664	3	9
BIRCH, York (accepted)	15,621	11	0
Rhodes	15,597	0	0

THE Torquay Town Council have agreed that Mr. H. A. Garrett, borough surveyor, should be paid an inclusive sum of 500 guineas for his extra services as architect for the Pavilion, the Council bearing the cost of additional assistance and expenses incurred in connection with the work.

The administrative committees of the Primitive Methodist churches in the Sheffield district have approved the amended plans of a proposed church at South Elmsall. The cost will be 1,500*l*.

SWIMMING baths are to be provided by public subscription at Spalding, as a Coronation memorial, and also as a memorial of the late King Edward VII., at a cost of between 2,000*l*. and 2,500*l*.

MR. G. WASHINGTON BROWNE, architect, Edinburgh, has been appointed architect for the proposed extension of Chambers Institution, Peebles. The scheme has the approval of Mr. Andrew Carnegie, who gave a donation of 10,000*l*.

MR. FRANK BELLIS, architect and surveyor, Bangor, has been selected by the local Board of Guardians out of forty-six applicants to prepare plans for a new workhouse infirmary at Bangor. The cost is estimated at 14,000*l*.

MR. ERNEST G. GILLOCK has been entrusted with the making of the new mayoralty seal of the City of London to replace the one now in use, which was made more than 500 years ago in 1381, during the reign of Richard II.

THE plans of the new place of worship for the congregation of John Knox Parish Church, Aberdeen, have been passed by the Plans Committee of the Town Council. The total estimated cost is between 6000*l*. and 7000*l*.

At the first meeting of the newly-formed Electricity Supply Committee of the Dublin Corporation, it was resolved that an application should be made for a loan of 125,000*l*. to carry out extension work.

EIGHTEEN engineers sent in schemes in the competition for the water supply project at Alnwick, and Major Tulloch the adjudicator, has awarded the 100*l*. premium to Messrs. Paterson & Nicholson, civil engineers, Bradford.

THE Nelson Loom and Power Company propose to build a new weaving shed in Brook Street, Nelson, Lancs., which will accommodate about 1000 looms and find employment for 500 operatives. It is also proposed to build a shed to hold over 1000 looms on a site in the Hendon district.

THE Surrey County Council have given formal notice of their intention to erect an elementary school at Ewell for 500 children and another public elementary school at Ellens Green for 100 children.

THE Nottingham Guardians on Tuesday agreed that accommodation for about 150 children be provided on a site near the present workhouse by the erection of six cottages, four to hold 30 children each, and two 15 each. A competition will be arranged, and a premium of 50 guineas offered for the best design.

PLANS have now been approved of for the addition to the Stirling County Council's Fever Hospital at Camelon of a building giving accommodation for ten beds in five wards, together with nurses' day-room, storeroom, &c., at an estimated cost of 1,600*l*.

THE committee of the Devon and Exeter steeplechases have decided to erect a grand stand on the race course at Haldon, in readiness for the next races in August. The present structure will be demolished, and the new stand built further back towards the road. Provision will be made for various rooms for officials and jockeys.

THE question of erecting a verandah round the Town Hall, Birmingham, for the protection from the rain of citizens waiting for admission has been considered by the Estates Committee of the City Council on several occasions. Some time ago the project was opposed by the members of the Birmingham Architectural Association, and at the last meeting of the Estates Committee the scheme was abandoned.

MR. CHARLES HODGSON FOWLER, of The College, Durham, for forty years architect to the Dean and Chapter of Durham, architect to the late Sir Tatton Sykes, architect also to Lincoln and Rochester cathedrals, left estate valued at 14,998*l*. gross, with net personalty 14,747*l*.

LININGS were granted on the 30th ult. at Renfrew Dean of Guild Court for the new soap works at Renfrew for Messrs. Ogston and Tennant (Limited). The site of the new works is in the burgh of Renfrew, on the Cart side. The probable cost is 50,000*l*. The buildings will be of steel construction, with fire-resisting floors. The building operations started on Tuesday last.

A LOCAL Government Board inquiry was held at the Guildhall, York, on the 31st ult., by Mr. R. G. Hetherington into an application by the York Corporation to borrow 57,637*l*. for extensions and improvements at the Sewage Works. The present scheme is intended to provide pumping machinery capable of lifting ten million gallons in twenty-four hours, septic tanks with a capacity of 2,700,000 gallons, and stand-by tanks with a capacity of a million gallons to deal with excess flow.

TRADE NOTES.

THE committee of the memorial clock and chimes fund at Bognor, Sussex, have placed the order for the Cambridge quarter-chime clock with Messrs. W. Potts & Sons, Ltd., clock manufacturers, Leeds and Newcastle-on-Tyne, from the plans of the late Lord Grimthorpe. Messrs. Wm. Potts & Sons have fixed a quarter-chime clock for H.M. Government at Armley Prison, near Leeds.

THE "Boyle" system of ventilation (natural), embracing the latest patent "air-pump" ventilators and air inlets, has been applied to St. Philip and St. James's Church, Ilfracombe. In a report received by Messrs. Boyle it is stated in regard to the ventilation that "satisfaction is general. The purity of the atmosphere in the church is remarkable, and ventilation without draught is an accomplished fact."

MESSRS. DOULTON & Co., Ltd., have been entrusted with the entire installation of sanitary appliances for the public conveniences at the approaching Scottish Historical Exhibition, Glasgow. A thoroughly representative exhibit of the company's various manufactures will be made at the same exhibition.

A LARGE clock is to be erected in the parish church, Hognaston, Derbyshire, the gift of the late Mr. J. H. Smith, of Derby. It will be fitted with all the latest improvements. The work is being done by John Smith & Sons, Midland Clock Works, Derby. The same firm are also making a large chiming clock with four 7 ft. dials for Elland Church, Yorkshire, and they recently made the town hall clock there.

THE Yale and Towne Co. are just putting upon the market an exhibit board of "Yale" padlocks for hanging to the upright of a fitment or shelves; the board containing an assortment of sixteen different padlocks, and so constructed that it may either swing out at right angles to the fitment or lay back flat against it. The price of the board (for which no charge is made) is 2s., which represents the aggregate list price of the individual padlocks. With each board is packed a small assortment of keys of each line.

MESSRS. C. & R. LIGHT, Ltd., Curtain Road, E.C., have paved the way to further and still greater success by erecting at Bedford commodious new works. In their wise recognition of the strenuousness of industrial competition the firm decided to put themselves in an unassailable position. A highly equipped factory or workshop is nowadays a *sine qua non* of success. Any visitor to the Bedford Cabinet Works will appreciate the thoroughness with which Messrs. Light have prepared to cope with additional business. Their main machine shop is laid out on a generous scale, and is fitted with the most modern appliances for economical and perfect production. Of no less importance is the re-organisation and increase in the Designing Department, because, as they wisely say, design is the keynote of success in the furniture trade, and the public rapidly becomes more discriminating. Special attention may be made in closing of their "Bestwood Panelling," for which a patent has been applied. This aims at putting the artistic embellishment of wood panels within the reach of people who have hitherto been denied it. There is a wide scope for wood panelling which will compete in price with good quality surface decoration in shops, residences, offices and public buildings. "Bestwood Panelling" can be fitted up by any ordinary workman, and is put forward as the cheapest panelling on the market.

VARIETIES.

DUMBARTON Dean of Guild Court on Monday approved of the plans submitted by the Burgh School Board for the new academy to be erected at Braehead at a cost of over 26,000l.

A SPECIAL meeting of Girvan School Board was held on the 14th inst., when nine competitive plans of the proposed school were considered. The plan submitted by Mr. Cowie, architect, Ayr, was unanimously chosen. The estimated cost was well within the Board's limit. Mr. H. E. Clifford, architect, Glasgow, acted as assessor.

MR. J. SIMPSON, F.R.I.B.A., Bolton, has prepared designs for a proposed Liberal Club at Ellesmere Port, Cheshire. A prominent feature is a public hall with seating accommodation for 300 persons. The club house will accommodate about 500 members. A company is being formed to raise the necessary 2,000l.

THE Annual Conversazione of the Institution of Civil Engineers has been fixed to take place on Thursday, June 22, in the Royal Albert Hall.

THE National Provident Institution will hold their twenty-fifth annual general meeting on the 24th inst., at the Cannon Street Hotel, E.C. The report shows that during the last financial year 1,643 proposals for assurance were

accepted, amounting to 629,605l. The amount of the Life Assurance Fund on November 20 was nearly seven millions sterling. The accounts for the year show a balance of receipts over disbursements of 232,394l. From the commencement of the Institution in 1835 to November last over sixteen millions sterling had been paid in claims.

AN interesting piece of engineering work is now being done at Earl's Court. When it was decided to replace the old wooden bridge that has connected the two sections of the Court with an ornamental steel structure, the question of the traffic on the District and Metropolitan Railways that send more than 100 trains per hour under the bridge had to be considered. Messrs. E. C. & J. Keay, bridge builders, of Birmingham, undertook to make the change without interference with ordinary conditions, and they are now engaged in replacing the old bridge with the new one, and doing it without disturbing traffic, either across the bridge or on the railways. One bridge is being torn down as the other goes up, and heavy work of carrying material over the structures is continued by the workmen engaged in the rejuvenation of Earl's Court for the coming summer season's Exhibition.

HAMILTON Dean of Guild Court last week approved of plans of an infant school in Beckford Street at an estimated cost of 3,000l. Plans of a pavilion for the Caledonian Bowling Club and of offices at the Greenfield Foundry, were also passed.

A MOVEMENT is on foot for the erection of a first-class theatre at South Shields, in the High Shields district. A large block of property at the top of Frederick Street, near Laygate Lane, has been secured for the purpose by Mr. Richard Thornton and Councillor John K. Hall, of South Shields, and Mr. John Heaton, of Roker. Plans will shortly be submitted to the Town Council for approval.

MR. COLIN MACANDREW, Lauriston Place, Edinburgh, has secured the contract for the men's quarters in the cavalry section of the barracks the War Office are to erect at Redford, N.B. It is understood the contract price is 100,000l., and that the work must be completed in a couple of years. Operations will be commenced immediately. The portion for which the contract has been given is the men's barracks and the officers' and troopers' stables. The contract for the commanding officer's quarters, officers' mess, sergeants' mess, married quarters, guard-room, block, and stores has not yet been settled.

WE regret to announce the death of Mr. J. J. Griffiths, J.P., the chairman and founder of the Patent Victoria Stone Co. For many years Mr. Griffiths took a very active part in the control of the company and much of the success obtained was through his untiring energy. Formerly, Mr. Griffiths was associated with his son, Mr. William Griffiths, in the business of William Griffiths & Co., Ltd., of Hamilton House, Bishopsgate Street and Guernsey, and there are very few local authorities who have not had business transactions with the firm as suppliers of Guernsey granite setts and roadway supplies.

THE Callender Company have sent us a handsome photograph of H.M.S. "Thunderer," built by the Thames Iron Works and Shipbuilding Co., Ltd., at Canning Town, E. The keel was laid April 13, 1910, the vessel launched on February 1, 1911. The main electrical distribution has been entirely effected by means of Callender's cable and special boxes.

THE Seventh Manchester Building Trades Exhibition, as arranged at the last Exhibitors' Meeting, will take place next year at the City Exhibition Hall from March 5 to March 16. The 1912 Exhibition is under the direct patronage of the Trade Associations and is already well supported by leading firms who have been exhibitors at Manchester in previous years. Invitations and free admittance tickets will be sent to architects, corporation officials, builders, and all interested in building and kindred trades within a wide radius of Manchester. Mr. Walter Cawood, 16 John Dalton Street, is acting as general manager.

THE Corporation of Monmouth have approved the design for the memorial of the Hon. C. S. Rolls, and commissioned Mr. Goscombe John, R.A., to proceed with the statue, which is to show Mr. Rolls holding a small model aeroplane in his hands and inspecting it. The pedestal is designed by Sir Aston Webb, K.C.B., R.A., and will have four bronze panels in relief—one with the inscription, the other three with ballooning, motoring, and flying the Channel respectively. It will be completed during the summer.

THE Bexhill Town Council have received the sanction of the Local Government Board to a loan for the erection of a colonnade on the Central-parade. The scheme combines an ornamental shelter with a sunk bandstand and enclosure. The enclosure will accommodate 700 people, and it can be enlarged to seat 3,000. The colonnade will complete the central front improvement scheme, which has been carried out at a cost of about 12,000l. The necessary plans were prepared by Mr. G. Wall, architect, Bexhill.

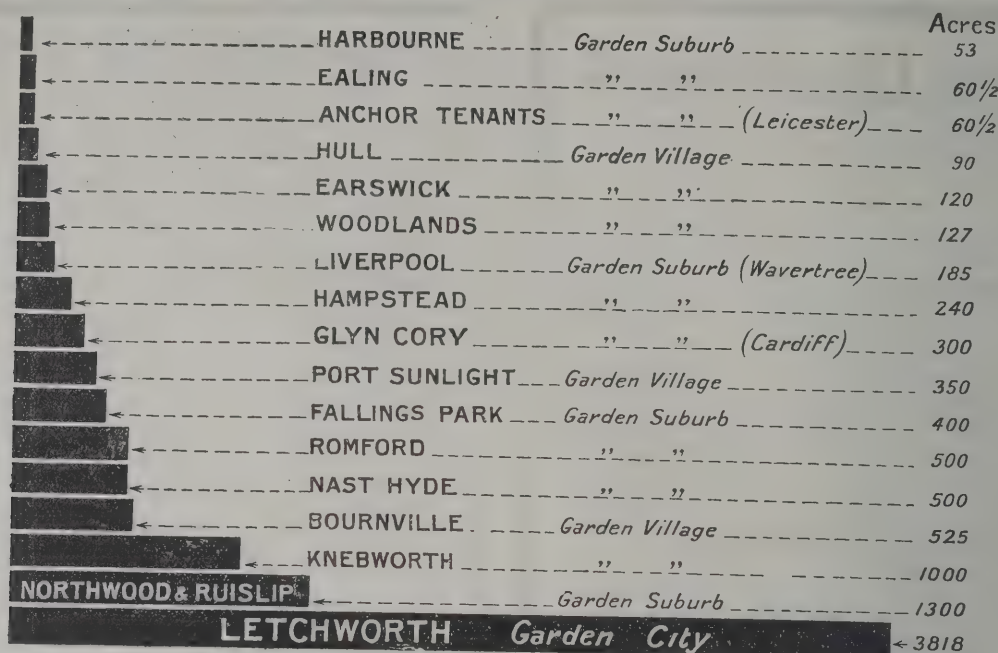


Diagram to Scale showing area and relative size of the principal Garden City, Garden Village and Garden Suburb Schemes in England.

THE EVOLUTION OF FIRE-RESISTING CONSTRUCTION.*

(Continued from last week.)

THE second Paper above referred to was read by Mr. A. W. Blomfield on "Concrete Building." This Paper was confined to the consideration of concrete in walls constructed *in situ*, by filling concrete into cases or moulds, made to shift to the various heights and positions as the work proceeds. This system has, we know, since been very largely adopted.

Mr. Blomfield confined his remarks principally to the limits which the material imposes on architectural design and decoration, and I think we shall all be in accord that at present no form of concrete exposed externally as concrete can take the place of stone or brickwork for architectural treatment, and Mr. Blomfield very sagaciously says that nothing can be done in the way of artistic treatment so long as the only aim is to show how well concrete walls can be made to imitate some other material and some other method of construction. Mr. Blomfield quite rightly protests against the idea of a concrete arch, and that it would be as rational to scoop out the underside of a York landing or a Portland stone lintel into an arched form to increase its strength as to mould a mass of concrete into such a shape with the same object. There can be little doubt that forty years ago fire-resisting construction in floors was greatly in favour, and Mr. Blomfield predicts that its capabilities in that direction, "without any adventitious aid of iron girders or other supports over considerable areas, has never yet been properly tested." We know the gradual increase in later days of unsupported areas of concrete in floors, but bearing in mind the great importance which should be attached to the mixing of the concrete, I do not think it would be wise to push this increase in unsupported area too far.

Mr. Edward P. Anson in summing up the Papers made one or two useful remarks, which are quite as useful to-day. He was convinced that unless thorough dependence can be placed upon the honest and conscientious execution of the work by the contractor, concrete is a dangerous material to use, inasmuch as a small percentage of inferior material in Portland cement would cause the ruin of the entire work. Mr. P. Anson testified to the great desirability of not using cement too newly made, and mentioned that the Metropolitan Board allowed concrete buildings to be used in London, but insisted upon a considerable amount of iron hoop bond, and would not allow concrete walls of less thickness than brickwork. So that at this date "reinforced concrete," in the shape of hoop iron bond and concrete, was adopted.

Then in April, 1876, with Sir Gilbert Scott, R. A., President in the chair, a Paper was read at the Royal Institute of British Architects by Mr. Alexander Payne on "Concrete as a Building

Material," and this was principally dealing with its ornamental for the fronts of buildings and avoiding ugliness. Mr. Payne observed, and this is an important matter in dealing with concrete and iron combined, that once you bed iron and keep it from the air you entirely protect it from rust and oxidation. Mr. Payne laid it down as an axiom that concrete offers unusual facilities as a material for walls, &c., "from the readiness with which iron or other ties can be embedded in it in any direction to resist any thrust or tendency to separate in the structure." Mr. Payne showed a design for a street façade in iron and concrete, but I cannot say that it would induce me, personally, to substitute concrete for stone or brick. Mr. Payne would not imitate the projections of stone and brickwork, but would obtain as large wall spaces as possible and as few projections ornamenting the work instead by indentation, calling to recollection the magnificent ornamentation of the Alhambra and the Mahomedan buildings of India. Mr. Payne went so far in his intense admiration for concrete, to advocate the panelling of the interior of an apartment and "do away for once with the everlasting wall paper," and he practically described ferrocement concrete when he proposed to "use iron embedded in concrete for the purpose of giving tensile strength to prevent fracture caused by thrusts of arches, vaults, &c., instead of opposing them by buttresses as is done in brick or stone."

(To be continued.)

THE Salford Union Guardians have decided to go forward with a proposal for providing new offices. A sub-committee is to go into details and formulate a scheme for the erection or rebuilding of the offices on the present site. The cost will be between 15,000*l.* and 20,000*l.*

At the monthly meeting of the Blackpool Building Plan Committee, at the Town Hall, fifty-three plans were considered and thirty-eight were approved. Among the latter were plans submitted by Mr. J. Cunliffe for twenty-eight houses and a shop in Cunliffe Road.

THE *Natal Mercury* of December 30 states that a Government White Paper has been published showing, in respect of the works and bridges provided in the Union Provincial Estimates the amount of commitments entered into by the South African Colonial Governments at the date of Union, and the works since authorised. The allocation to the Cape covers the provision of new post offices at Wynberg, Mowbray, and Oudtshoorn, aggregating 5,750*l.*; and renovations at Government House, Capetown, 5,000*l.* The chief item in the Free State is for new Law Courts at Bloemfontein at a cost of 64,500*l.* The largest expenditure for Natal is on account of Maritzburg Asylum, viz., 26,200*l.* In the Transvaal it is proposed to expend 19,295*l.* on the Pretoria Asylum; 72,000*l.* on Government buildings and Courts at Standerton, Barberton, Krugersdorp, and Benoni; and 46,665*l.* on additions to the prison buildings at Johannesburg.

* A paper by Mr. William Woodward, F.R.I.B.A., read at the ordinary general meeting of the Surveyors' Institution, on Monday, Feb. 6.

THE

Architect and Contract Reporter.

FRIDAY, FEBRUARY 24, 1911.

Published weekly, subscription 19s. per annum for Great Britain, and for Colonial and Foreign subscriptions £1 6s. 6d. All business communications to the Managing Director,

P. A. GILBERT WOOD,

Publishing Offices, 6-11 Imperial Buildings, Ludgate Circus, London, England.

Telephone No. 4725 Holborn.

Branch Offices at 43 OLD QUEEN STREET, S.W., Messrs. W. HAY FIELDING & CO. being the representatives for all business purposes.

The Birmingham Offices are at 102 COLMOORE ROW.

* Entered in the United States of America as second-class matter.

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The International News Co., 5 Bream's Buildings, Chancery Lane, London, England, and New York.

AGENTS FOR CANADA:

Messrs. WM. DAWSON & SONS, Ltd., 91 Church Street, Toronto, to whom all correspondence for Subscription and Advertising Rates should be made.

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SOUTH AFRICA: Central News Agency, Ltd.

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Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

Special Position Spaces.—Unless ordered for weekly insertions the Proprietors cannot guarantee particular dates.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit the insertion of lengthy communications.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

* As great disappointment is frequently expressed at the nonappearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

ARGENTINE.—April 20.—A competition of plans for a hospital and school of medicine, to be erected at Rosario in celebration of the Argentine Centenary at a cost of about 149,000l. Prizes of 1,050l., 700l. and 440l. will be awarded. A copy of the conditions, &c., may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, London, E.C., where also a limited number of copies are available for distribution. Plans must be sent to the "Secretaria de la Comisión Pro-Hospital é Instituto de Enseñanza Médica del Centenario, Calle Córdoba 1230," Rosario.

ATHENS.—Aug. 21.—An international competition of plans is invited by the Greek Ministry of the Interior (Public Works) for the erection of a Court of Justice at Athens. The cost of the building must not exceed 160,000l. A first prize of 800l., and a second prize of 320l. will be awarded. The Greek Official Gazette, containing particulars (in Greek and in French) may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

BRADFORD.—May 1.—The Board of Management of the Bradford Infirmary invite plans with estimates for a new infirmary in Duckworth Lane. Mr. Keith D. Young, F.R.I.B.A., will act as assessor. Deposit 3l. 3s., which will be refunded on receipt of a bona-fide design or if block plan, instructions, &c., are returned within a month after receipt of replies to competitors' questions. The Secretary Superintendent of the Royal Infirmary, Bradford. (For further particulars see advertisement, January 13.)

COVENTRY.—April 1.—The Corporation contemplate the erection of municipal offices in the centre of the city, and also possibly a town hall, and accordingly invite competitive designs. Mr. E. Guy Dawber, F.R.I.B.A., will act as assessor. Deposit 2l. 2s., which will be refunded on receipt

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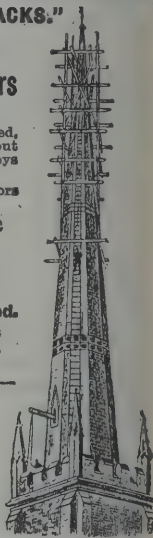
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of a bona-fide design or if the particulars are returned within fourteen days of receipt. Mr. Geo. Sutton, town clerk, 10 Hay Lane, Coventry. (For further particulars see advertisement, November 18.)

CUBA.—April 15.—An international competition has been arranged for a Presidential Palace to be erected at Havana at a cost of about 205,000l. Premiums of 10,000 pesos and 5,000 pesos will be awarded. Conditions may be seen at the Cuban Legation, 3 Grosvenor Mansions, Victoria Street, S.W., or the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

DUNFERMLINE.—The Carnegie Trust invite architects to furnish competitive designs for the erection of a Women's Institute. For conditions apply to the Secretary of the Carnegie Dunfermline Trust, Abbot Street, Dunfermline.

LOWESTOFT.—The Education Committee invite architects practising or residing in Norfolk and Suffolk to submit designs for an elementary school. Premiums of twenty, ten, and five guineas. Particulars may be had on payment of 5s. from Mr. R. Beattie Nicholson, town clerk, Town Hall, Lowestoft. For further particulars see advertisement, Feb. 10.

MANCHESTER.—March 31.—The Corporation invite designs for a Library and Art Gallery upon the Piccadilly site in the centre of the city. The Preliminary Competition closes March 31. The authors of ten selected designs will compete in the Final Competition. Mr. Reginald Blomfield, A.R.A., will act as assessor, in connection with the city architect. Apply for particulars to Mr. Thomas Hudson, Town Clerk, Town Hall, Manchester. (For further particulars see advertisement, January 6.)

ROCHDALE.—March 6.—The Guardians invite competitive plans for a home accommodating forty nurses. Apply to Mr. R. A. Leach, Union Clerk Rochdale.

ROMFORD.—The Town Planning and Modern House and Cottage Exhibition at Gidea Park, Squirrels Heath, in the Romford Garden Suburb, summer 1911. Class IV.—Town plan of Gidea Park—prizes of 100l. and 50l. Class VII.—Open to builders. For excellence of workmanship and construction in the erection of a cottage in Class I. or II.—first prize, gold medal and 100l.; second prize, 50l. Final dates for designs: Class IV., March 31, 1911. Mr. Michael Bunney, A.R.I.B.A., hon secretary, 33 Henrietta Street, Strand, W.C.

SOUTHAMPTON.—The Council of Hartley University College invite designs for the proposed new buildings. Mr. H. T. Hare, F.R.I.B.A., will act as assessor. The deposit of 1l. 1s. with the application will be returned if the conditions are returned within fourteen days. Mr. D. Kiddle, registrar, Hartley University College, Southampton.

SOUTH MOOR.—March 15.—Competitive designs are invited for parochial hall and institute at St. George's Church, South Moor. Cost not to exceed 1,500l. Premiums of 15l. and 5l. will be awarded. Particulars from Rev. F. S. Myers, South Moor, Stanley, S.O., Durham.

SWINTON.—The Vicar and Churchwardens of Swinton (Rotherham) invite plans, &c., for erection of a parish hall and other buildings. Full particulars on application to Rev. C. Steele, Swinton Vicarage, Rotherham.

CONTRACTS OPEN.

ACCRINGTON.—Feb. 28.—For various trades required in erection of New Jerusalem Church, Spring Hill. Deposit 1l. Mr. F. Harrison, architect, 30 Willow Street, Accrington.

ARMAGH.—March 6.—For renovation of a building known as the Market House, Armagh, for use as a technical school. Mr. James Lennon, town clerk, City Hall, Armagh.

BATH.—Feb. 25.—For the erection of engine-house, suction gas-house, and other appurtenant works, in Midland Road, Twerton. Deposit 2l. 2s. Mr. W. H. Radford, C.E., Albion Chambers, King Street, Nottingham, and the City Surveyor's Office, Guildhall, Bath.

BELFAST.—March 1.—For erection of new hospital in Templemore Avenue, for the Board of Management of the Ulster Hospital for Children and Women. Messrs. Watt, Tulloch & Fitzsimons, architects, 77a Victoria Street, Belfast.

BILLINGE.—March 2.—For the removal and erection of a building for phthisis cases in the grounds of the workhouse infirmary at Billinge, near Wigan. Messrs. W. C. Ralph & So architects, Leader's-buildings, King-street, Wigan.

BLAKENEY.—March 4.—For (a) erection of new out offices at the Church of England school, (b) division of schoolroom with glazed partition, (c) removal of gallery in infant room, &c. Mr. H. L. Langley, correspondent, Church House, Blakeney, Glos.

BLYTH.—March 2.—For the erection of Blyth New Post Office. Deposit 1l. 1s. The Postmaster, Head Post Office, Newcastle-on-Tyne, or H.M. Office of Works, Storey's Gate, London, S.W.

BOLTON.—March 13.—For erection of special school in Flash Street. Deposit 1l. 1s. Mr. Fred Wilkinson, director of education, Education Offices, Nelson Square, Bolton.

BRIDGWATER.—March 7.—For erection of a court house and police station on site in Northgate, Bridgwater. Deposit 2l. 2s. The Borough Surveyor, Municipal Buildings, High Street.

BOURNEMOUTH.—March 3.—For construction of sea wall and undercliff drive; and other works in connection therewith, for the Town Council. Deposit 2l. 2s. Mr. F. W. Lacey, M.I.C.E., borough engineer, Municipal Offices, Bournemouth.

BURY ST. EDMUNDS.—March 13.—For erection of two almshouses in Northgate Street, for the Guildhall Feoffment Trust. Send names and 2l. deposit by March 2. Mr. S. Naish, M.S.A., architect, Bury St. Edmunds.

CLAYTON-LE-MOORS.—March 8.—For erection of elementary school at Clayton-le-Moors, near Accrington, to accommodate 810 scholars, with special rooms for the teaching of manual instruction, cookery, and laundry work, &c. Deposit 2l. Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

CUDWORTH.—Feb. 28.—For the mason and bricklayer and terra-cotta work, ironfounders, plumbers and glaziers, plasterers, tilers, and painters' work, in extension of Star Hotel, Cudworth, Yorks. Messrs. R. & W. Dixon, Barnsley.

EDINBURGH.—Feb. 28.—For the following works in connection with alterations to be carried out at 41 Lauriston Place, for the Edinburgh School Board, viz. (1) mason, brick, carpenter, joiner and plaster work, (2) plumber work, (3) painter work, (4) electric lighting. Mr. J. W. Peck, clerk, School Board Offices, Castle Terrace, Edinburgh.

EDINBURGH.—March 4.—For the following works in connection with erection of Tynecastle school, M'Leod Street, for the Edinburgh School Board, viz., (1) excavating, mason, and brick works; (2) carpenter, joiner, and glazier works; (3) structural, steel, and smith works; (4) slater work; (5) plumber work; (6) plaster and concrete works; (7) painter work. Mr. J. A. Carfrae, architect, 3 Queen Street, Edinburgh.

EDINBURGH.—March 6.—For the several works required in the erection of the Usher Hall on site at Lothian Road, for the Corporation. The works for which tenders are invited consist of demolition of old buildings, mason and brick work, carpenter and joiner work, smith work, plumber work, plaster and concrete work, glazier work, tile-layer work, roof asphalt work, painter work, electric lighting. Messrs. Stockdale, Harrison & Sons & Thomson, architects, 7 St. Martin's East, Leicester. Deposit 2l. 2s. for each schedule. Mr. J. A. Williamson, A.R.I.B.A., city superintendent of works, City Chambers, Edinburgh.

EDINBURGH.—March 8.—For the whole works connected with the taking down of the old Golf Pavilion in Portobello Park, and removal and re-erection of same at Powderhall Bowling Green. Mr. James A. Williamson, A.R.I.B.A., City Chambers, Edinburgh.

ESCLUSHAM.—Feb. 28.—For alterations and repairs to Esclusham Church schools, near Wrexham. Rev. J. E. Tompson, Esclusham Vicarage.

HALIFAX.—March 3.—For various works required in erection of additional storey to Fenton Road Works. Messrs. Medley Hall & Son, architects, 1 Harrison Road, Halifax.

HARROW-ON-THE-HILL.—March 11.—For erection of conveniences, shelters, stores, &c., at the Recreation Ground. Deposit 1l. Mr. J. Percy Bennetts, engineer and surveyor, Council Offices, Harrow.

HOLDEN.—Feb. 28.—For erection of caretaker's house miners' hall and literary institute. Deposit 3l. Mr. James Hamilton, architect, Horden, Sunderland.

IRELAND.—Feb. 28.—For erection of a residence, Fortlands, Charleville, Cork. Deposit 1l. Mr. Samuel F. Hynes, F.R.I.B.A., 5 South Mall, Cork.

IRELAND.—Feb. 28.—For building a gentleman's residence at Short Castle, Mallow. Messrs. W. H. Hill & Son, architects, 28 South Mall, Cork.

IRELAND.—March 1.—For building dwelling-house at Killane near Castletown. Mr. Patrick Menton, architect, Newtown Moate.

IRELAND.—March 6.—For the alteration of Bank premises at Kingstown, co. Dublin. Deposit 2l. 2s. Messrs. Blackwood & Jury, architects, Belfast. Messrs. C. H. Stevens & Sons, 13 Donegall Square North, Belfast.

ISLE OF WIGHT.—Feb. 28.—For making additions to drill hall at Freshwater, for the County of Southampton Territorial Force Association. Deposit 2l. 2s. Mr. R. H. P. Bevis, architect, Elm Grove Chambers, Southsea.

ISLE OF WIGHT.—March 8.—For construction of new timber groyne, for Ventnor Urban District Council. Mr. H. Hughes Oakes, engineer and surveyor, Town Hall, Ventnor, Isle of Wight.

LEEMING.—March 4.—For new out-offices at Leeming Council School, North Riding. The Inspector of Buildings, County Hall, Northallerton.

LINTHWAITE.—Feb. 28.—For the various works required in erection of three dwelling houses, Waingate, Linthwaite, Yorks. Messrs. Lunn & Kaye, architects and surveyors, Milnsbridge and Huddersfield.

LONDON.—March 2.—For erection of Western Telephone Exchange, for the Commissioners of H.M. Works and Public Buildings. Deposit 1l. 1s. Mr. J. Rutherford, 22 Carlisle Place, London, S.W.

LONDON.—March 8.—For supplying and fixing iron escape staircases at their workhouse, Gordon Road, Peckham, S.E., for the Guardians of St. Giles, Camberwell. Deposit 1l. 1s. Mr. A. E. Mullins, architect, 48 Peckham Road, Camberwell, S.E.

LONDON.—March 1.—The Metropolitan Asylums Board invite separate tenders for the following works:—(1) Mess-room for charge nurses at the North-Western Fever Hospital, Fawn Road, Hampstead, N.W.; (2) forming operating-room, &c., at the Park Hospital for Children, Hither Green, Lewisham, S.E.; (3) erection of steel-framed greenhouse and potting-shed at the Children's Infirmary, Carshalton, Surrey. Deposit 1l. for each contract. Mr. W. T. Hatch, M.I.C.E., M.I.M.E., engineer-in-chief, Office of the Board, Embankment, E.C.

MALDON.—April 3.—For erection of a public elementary school at Maldon, Essex, for 520 children. Send names and addresses and 2l. 2s. deposit by Feb. 27 to Mr. F. H. Bright, clerk to the Committee, 53 High Street, Maldon, Essex.

MANCHESTER.—Feb. 25.—For erection of the Atherton Street Municipal school, Deansgate. Deposit 2l. 2s. The Accountant, Education Offices, Deansgate, Manchester.

MANCHESTER.—Feb. 25.—For supply of red terra-cotta for the new Atherton Street Municipal school, Deansgate. Deposit 1l. 1s. The Accountant, Education Offices, Deansgate, Manchester.

MIDDLESBROUGH.—March 4.—For erection and completion of a wing and extensive alterations and additions, at the Linthorpe Certified Industrial School. Mr. S. E. Burgess, M.I.C.E., borough engineer and surveyor, Municipal Buildings, Middlesbrough.

MYTHOLMROYD.—March 1.—For works required in erection of detached house on the Hawksclough Estate, Mytholmroyd, Yorks. Messrs. Sutcliffe & Sutcliffe, F.S.I., architects, New Road, Hebden Bridge.

NORMANTON.—March 6.—For the following works at Haw Hill Park, viz.:—Erection of caretaker's lodge, two conveniences, and two boundary walls, and construction of cold frames; provision and erection of wrought iron boundary fence and gates; provision and erection of bandstand and shelter; provision of 30 ornamental and 25 plain seats; construction of street, about 200 yards in length, and for the erection of a shelter and convenience at Smirthwaite Recreation Ground. Mr. A. Hartley, architect and surveyor, Council Offices, Normanton.

NORWICH.—March 6.—For erection of an underground convenience in Earlham Road. Deposit 5l. Mr. Arthur E. Collins, M.I.C.E., city engineer, Guildhall, Norwich.

POOLE.—Feb. 27.—For stripping and relaying roof tiling on girls' school, Branksome Heath. The Borough Surveyor.

SCOTLAND.—For mason, joiner, slater, and other works connected with enlargement and improvement of farm house of Stoneybridge, Gretna. Mr. Tweedie, architect, Annan.

SCOTLAND.—Feb. 28.—For the following works on the Strathspey estate:—(1) Keeper's cottage at Lochindorb, Dava—mason, carpenter, plumber, slater, and plasterer works; (2) keeper's cottage at Slaemore, Abernethy—mason, carpenter, slater, and plasterer works; (3) farmhouse at Lagg of Drumullie, Boat of Garten—carpenter, slater, and plasterer works; (4) Beananach, Carr Bridge—water supply to house, supplying and laying 860 yards or thereby of 1 inch pipe, cutting track, and other works. Mr. J. G. Smith, factor, the Strathspey Estate Office, Grantown-on-Spey.

SCOTLAND.—March 4.—For the mason and brick, carpenter, plaster, slater, painter, plumber, and glazier works in connection with new hall in Guildtown, Perth. Mr. Chalmers, architect, 15 High Street, Perth.

SCOTLAND.—March 7.—For all departments of work necessary in erection of a manse at Carr Bridge, Duthil, Inverness. Mr. A. Cattanaach, architect, Carr Bridge.

SEVENOAKS.—March 3.—For erection of Sevenoaks new telephone exchange, for the Commissioners of H.M. Works and Public Buildings. Deposit 1l. 1s. The Postmaster, Post Office, Sevenoaks, Kent. H.M. Office of Works, Storey's Gate, London, S.W.

SHEFFIELD.—March 2.—For works of all trades required in erection of public baths at Corporation Street and Mowbray Street. The City Architect, Town Hall, Sheffield.

SKIPTON.—March 4.—For erection of gate and fence walling at the sewage farm. Mr. A. E. W. Aldridge, surveyor to the Council, Town Hall, Skipton.

SOUTH NORMANTON.—March 6.—For erection of two cottages. Deposit 1l. 1s. Mr. John Tomlinson, architect, South Normanton.

SPITTALL.—Feb. 27.—For erection of a rocket life-saving apparatus house at Spittall, Northumberland. H.M. Coast Guard Station, Berwick.

STAINLAND.—Feb. 25.—For the various trades required in erection of a farm house and dairy, at Manor House Farm, Stainland, Yorks. Messrs. Chas. F. L. Horsfall & Son, architects and surveyors, Lord Street Chambers, Halifax.

SWAYTHLING.—March 6.—For erection of a cookery room at Swaythling Council school, Hants. Deposit 10s. Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

TEWKESBURY.—March 6.—For the construction of an outside iron fire escape and alterations at the Workhouse. Mr. H. A. Badham, clerk to the Guardians, Tewkesbury.

WALES.—March 13.—For extensions at the Brynmawr County Schools. Deposit 2l. 2s. Mr. F. R. Bates, architect, 26 Westgate Chambers, Newport, Mon.

WALES.—Feb. 27.—For erection of electric theatre at Aberavon. Deposit 1l. 1s. Messrs. W. B. Jones, architect, 41 Wind Street, Swansea, & J. A. James, architect, Port Talbot.

WALES.—Feb. 27.—For making additions to the Institute, Carnarvon. Mr. Rowland Lloyd Jones, architect, 14 Market Street, Carnarvon.

WALES.—Feb. 27.—For the erection of a training college for women at Barry, for the Glamorgan County Council. The Barry Docks Police Station, and the Glamorgan County Council Offices, Westgate Street, Cardiff.

WALES.—Feb. 27.—For erection of drill hall and caretaker's quarters at Aberdare, for the Glamorgan Territorial Force Association. Messrs. A. O. Evans, Williams & Evans, architects, Post Office Chambers, Pontypridd.

WALES.—Feb. 28.—For erection of a block of five houses at Tredegar, Mon., for the Park View Building Club, No. 2. Mr. Wm. Harris, architect and surveyor, Bank Chambers, Bargoed.

WALES.—March 3.—For alterations and additions to Bethany C.M. Chapel, Nant, Gwynant, Beddgelert. Mr. J. E. Jones, Gerynt, Nant, Beddgelert.

WALES.—March 4.—For building a farm house at Blantflyman, in the Parish of Mount, near Cardigan. Mr. J. Evans, Treasfawr, Beulah, R.S.O., Cardiganshire.

WEST HAM.—March 14.—For the following works, for the West Ham Town Council:—(1) Erection of addition to tramway car sheds, Greengate Street, Plaistow; (2) construction of a bridge, about 60 feet span, for single line of traffic, Cook's Road, Stratford. Deposit 1l. for each contract. Mr. J. G. Morley, borough engineer, Town Hall, West Ham, E.

WHITLEY.—Feb. 27.—For the following works for the Whitley and Monkseaton Urban District Council, Northumberland, viz.: (1) construction of public conveniences at the rear of the Council Offices, Front Street, Whitley Bay; (2) private improvement works in Pykerley Lane. Mr. A. J. Rousell, A.M.I.C.E., surveyor, Council Offices, Whitley Bay.

WHITEFIELD.—March 2.—For erection of a secondary and art school at Whitefield, Lancs., for the Governors of Stand Grammar School. Deposit 3l. Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

WINCHESTER.—March 2.—For supplying and erection of certain fencing, stalling and other wood work at the bathing place in the new recreation ground. The City Surveyor's Office, Guildhall, Winchester.

WORKSOP.—March 1.—For new church, Worksop, Notts (whole or separate trades). Messrs. Hodding & Co., solicitors, Worksop, and Messrs. Austin & Paley, architects, Lancaster.

WORKSOP.—March 4.—For erection of a school off Newgate Street. Send names and 2l. 2s. deposit by Feb. 25, to Mr. E. G. Lucas, architect, Bridge Street, Worksop.

TENDERS.**ALDERSHOT.**

For erection of secondary school. Mr. T. C. UREN, surveyor.

Love & Co.	£11,200	0	0
Drowley & Co.	9,700	0	0
Crosby & Co.	9,399	0	0
Mardon & Mills	9,295	0	0
Faulkes	9,290	0	0
Hughes	9,180	0	0
Fitt	9,180	0	0
Kirk & Randall	9,132	0	0
Cæsar Bros.	9,119	0	0
Nightingale	8,855	0	0
Musselwhite & Sapp	8,799	0	0
Snuggs	8,799	0	0
Crockerell	8,792	0	0
Hockley Bros.	8,689	0	0
Kemp & Co.	8,689	0	0
Martin, Wells & Co.	8,070	0	0

BRISTOL.

For erecting a bakery at Barton Hill, Bristol. Mr. MILES W. HUDSON, architect, London.

Jones & Son	£3,288	0	0
Bray & Slaughter	2,874	0	0
Humphries & Son	2,795	0	0
Parker & Sons	2,725	0	0
Stephens, Bastow & Co.	2,648	0	0
WILKINS & SON, Bristol (accepted)	2,579	0	0

BIRKENHEAD.

For conversion of dwelling houses into shops, Nos. 88 to 94 Watson Street, for Mr. H. Stacey. Mr. J. H. MCGOVERN, architect, 26 North John Street, Liverpool. SHARROUT, WILLIAMS & GREEN (accepted) - £150 0 0

BROADSTAIRS.

For construction of public conveniences on the Parade and at the rear of the Council Offices. Mr. H. HURD, C.E., town surveyor.

Elliott & Co.	£1,661	0	0
Paramore	1,646	0	0
Dunn	1,497	0	0
Martin	1,496	0	0
Woodhall & Son	1,444	0	0
J. T. MAY, Broadstairs (accepted)	1,278	0	0

CROYDON.

For enlargement of the Central Polytechnic. Mr. H. CARTER PEGG, architect, Thornton Heath.

Foster & Dicksee, Ltd.	£5,995	0	0
Moss	5,967	0	0
F. & G. Foster	5,878	0	0
Spencer, Santo & Co., Ltd.	5,834	0	0
Honour	5,820	0	0
Gough & Co.	5,759	0	0
McC. E. Fitt	5,679	0	0
Akers & Co.	5,539	0	0
Moss & Sons	5,430	0	0
Bowyer & Co.	5,376	0	0
W. Smith & Sons	5,367	0	0
Everitt	5,350	0	0
Saunders	5,300	0	0
J. SMITH & SONS, Ltd., Norwood (accepted)	5,252	0	0

FARNHAM.

For carrying out alterations and additions to existing drill hall premises, Bear Lane, for the Surrey Territorial Force Association.

Holden	£1,730	0	0
German & Son	1,644	8	0
Lole & Co.	1,466	0	0
Nightingale	1,350	0	0
Kirk & Randall	1,347	0	0
Gathercole Bros.	1,330	0	0
Mardon & Mills	1,299	0	0
Parker & Sons	1,297	0	0
Smith & Sons	1,280	0	0
Fitt	1,277	0	0
Renshaw	1,260	0	0
Drowley & Co.	1,225	0	0
Goddard & Sons	1,219	0	0
J. Cockerell	1,198	10	0
Crosby & Co.	1,193	0	0
Martin, Wells & Co., Ltd.	1,125	0	0
Ellis	1,106	0	0
Caesar Bros., Hale (recommended)	1,079	0	0

EPPING.

For the erection of an infirmary and master's house, &c., at the workhouse. Messrs. TOOLEY & FOSTER, architects, Buckhurst Hill.

Lown & Co.	£8,585	0	0
Wood & Sons	8,052	0	0
Parren & Son	8,006	10	9
Webb	7,945	0	0
Trudgett	7,729	0	0
Nightingale	7,575	0	0
Chessum & Sons	7,402	0	0
Brown	7,400	0	0
Leslie & Co.	7,360	0	0
Young & Sons	7,256	0	0
Warriner	7,231	0	0
Lowe & Co.	7,221	0	0
Webb & Co.	7,092	0	0
Burtwell	7,074	10	0
Roberts & Co.	7,013	0	0
Coxhead	6,984	0	0
F. & G. Foster	6,881	0	0
Parker & Sons	6,859	0	0
Paul	6,838	10	0
Smith & Sons	6,798	0	0
F. & E. Davey	6,747	0	0
Horswill	6,693	0	0
Whiffin & Sons	6,662	18	1
Lawrence & Son	6,642	0	0
Day	6,620	16	0
Fairhead	6,616	0	0
Fitch & Cox	6,599	0	0
Fryd	6,568	0	0
Foster & Son	6,446	0	0
Mattock Bros.	6,407	0	0
CLARK & SONS (accepted)	5,997	15	0

HEREFORD.

For the construction of sand filter beds at the city water-works. Mr. JOHN PARKER, A.M.I.C.E., city surveyor, Hereford.

Brebner & Co.	£5,472	10	9
Hobrough & Co.	5,241	4	6
Hyslop & Co.	4,952	17	9
Vale & Sons	4,536	0	0
Denham	4,452	0	0
Lant	4,372	8	0
Johnson Bros.	4,316	13	7
Law, Kidderminster (recommended)	3,995	17	2

LIVERPOOL.

For conversion of dwelling-houses into shops at the corner of Pimhill Street and Vronhill Street, High Park Street, for Messrs. J. Howard Williams & H. Jones, J.P. Mr. J. H. MCGOVERN, architect, Liverpool. £150 0 0 WYNNE (accepted)

For the erection of the Royal Southern Hospital Nurses' Home. Mr. ALFRED CULSHAW, architect, Liverpool.

Thornton & Sons - £2,347 0 0

Hughes & Stirling - 2,318 0 5

Jones & Sons - 2,274 0 0

Brown & Backhouse - 2,139 0 0

Tompkinson & Sons - 2,131 2 7

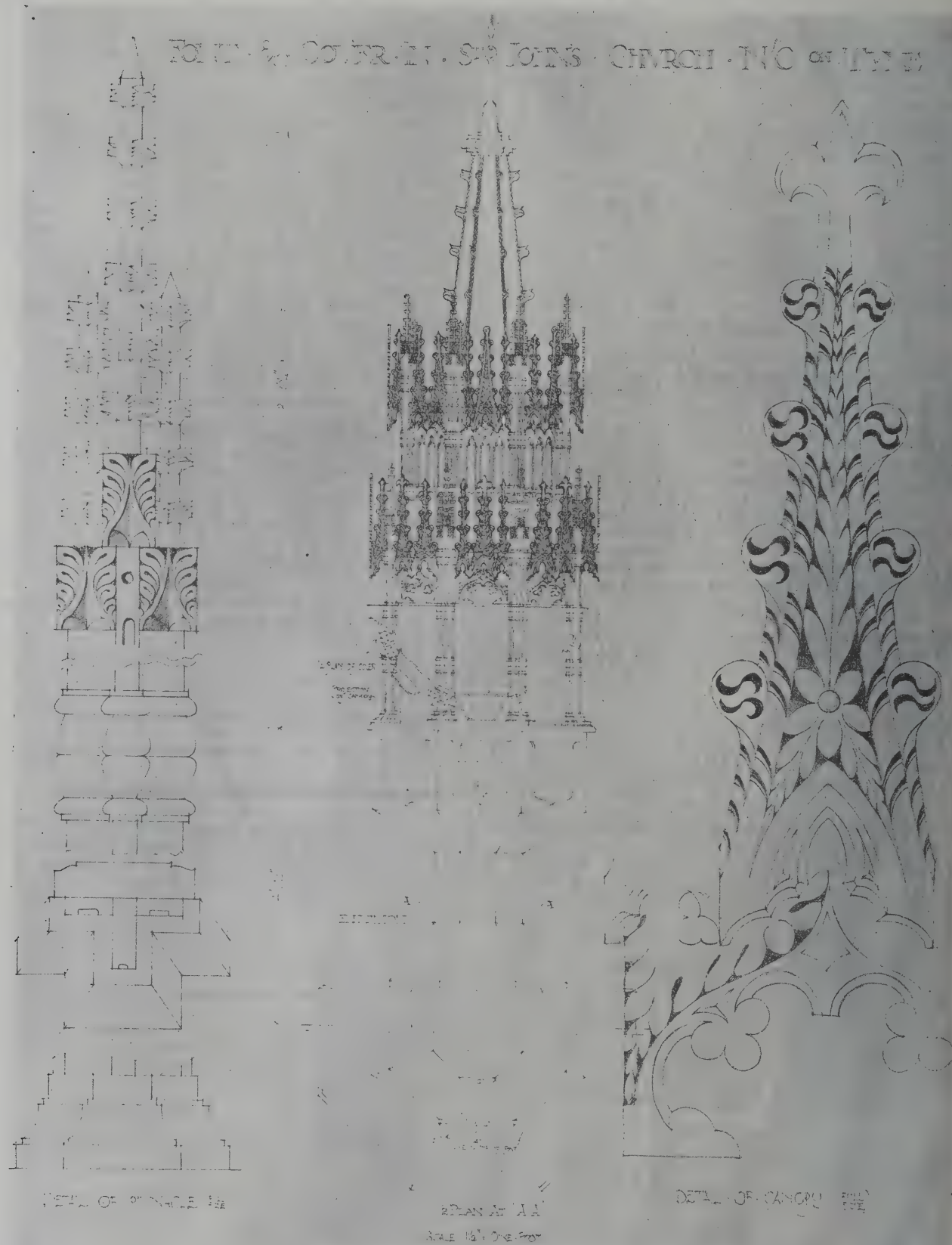
LLOYD, Walton (accepted) - 1,942 15 0

MARGATE.

For the general builders' work in the erection of a large concert hall with arena and colonnade at the Fort. To be completed in twenty weeks. Mr. ERNEST A. BORG, borough engineer, Margate.

Paramors	£19,818	0	0
Coles	19,700	0	0
Wall	19,582	0	0
Davidson & Miller	19,121	0	0
Nightingale & Wingfield	19,120	0	0
Lowe & Co.	19,000	0	0
Pattinson & Sons	18,818	0	0
Patrick	18,576	0	0
Perry & Co.	18,300	0	0
Smith & Sons	18,270	0	0
Kirk & Randall	17,998	0	0
Hayward & Paramor	17,768	0	0
Stephens, Bastow & Co.	17,670	0	0
Denne & Sons	17,590	0	0
Browning	17,550	0	0
Lovatt	17,500	0	0
Seager	16,998	0	0
Minter	16,725	0	0
DENNE, Walmer (accepted)	16,449	0	0
Gluyas	16,000	0	0

"THE ARCHITECT" STUDENTS' SKETCHING AND MEASURING CLUB.



From a Drawing by "SANS PEUR."

**FONT AND COVER IN ST. JOHN'S CHURCH,
NEWCASTLE-UPON-TYNE.**

This is an example of the steeple variety of font covers. The cover is of sixteenth-century date, probably late; the design, though Gothic in spirit and in form, shows in the details the Classic influence. It is octagonal in shape, and of two stages surmounted by a crocketed spirelet.

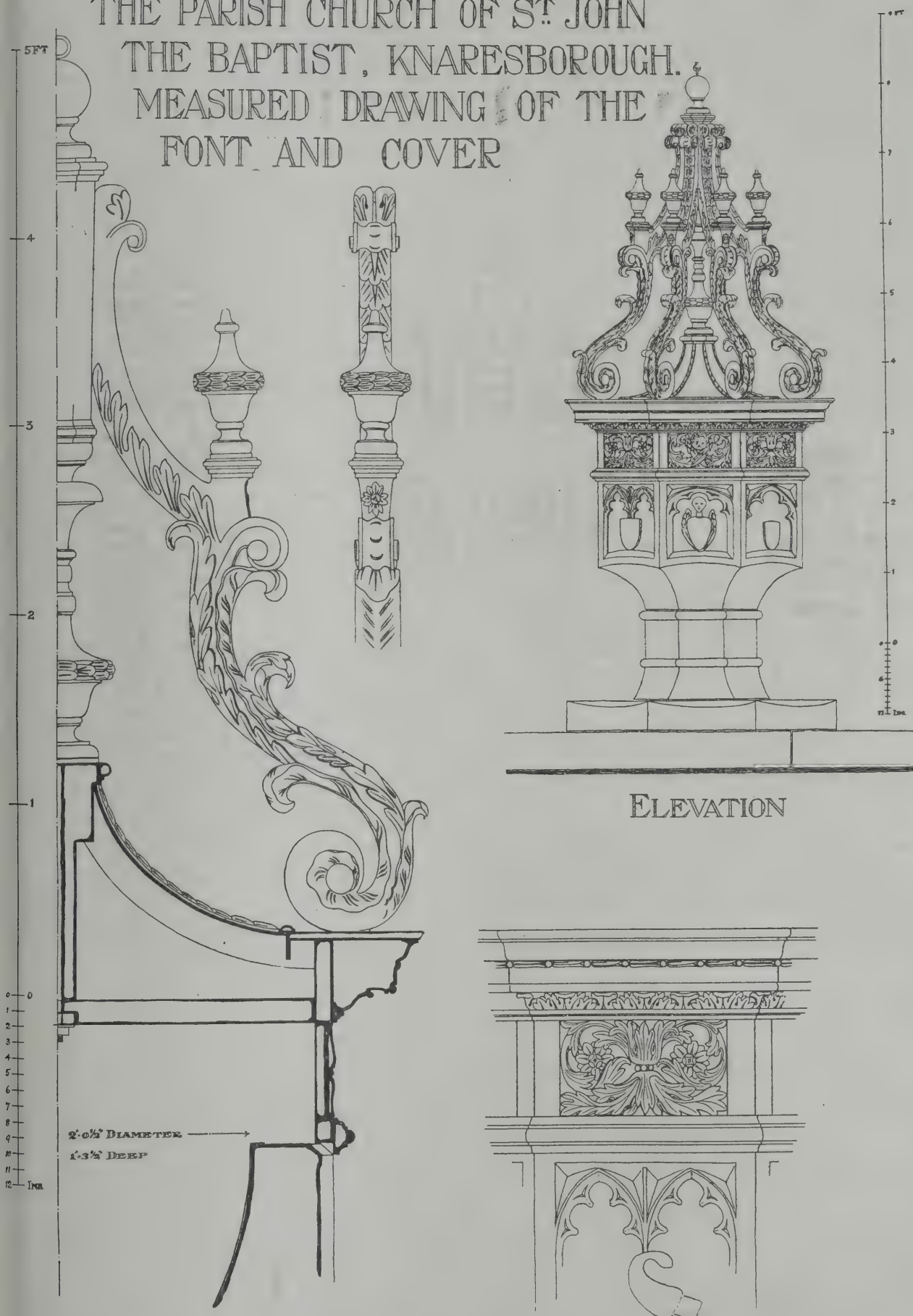
The present font dates from A.D. 1689, and was erected by Andrew Bates, who was lecturer at the church at that date, one of the shields bearing his arms. Other than the

shields it is quite devoid of ornament and forms an excellent foil to the rich woodwork above it.

The position of the font in relation to the baptistry is such as to give a very effective contrast between the light of the aisle and the gloom under the tower vault.

MR. MERVYN MACARTNEY, consulting architect to the Dean and Chapter of St. Paul's, London, has been appointed consulting architect to the Dean and Chapter of Durham, in succession to the late Mr. Hodgson Fowler.

"THE ARCHITECT" STUDENTS' SKETCHING AND MEASURING CLUB,
THE PARISH CHURCH OF ST. JOHN
THE BAPTIST, KNARESBOROUGH.
MEASURED DRAWING OF THE
FONT AND COVER



ELEVATION

From a Drawing by Mr. E. H. GIBSON.

ST. JOHN THE BAPTIST, KNARESBOROUGH.

The font is Early Perpendicular in style, and is rather rudely
rved. It is of unusual depth and breadth, being one foot
ree and a half inches deep and two feet and a half inch

wide. The date is a matter of conjecture; it is probably
about 1440. The cover is supposed to have been made during
the reign of Charles II., probably about 1670. There is a
curious mingling of styles in the turned pinnacles and the
general curvature of the whole cover, and the Classic detail

of the leaves which cover the scrolls. Most of the panels are modern copies of the old ones, and were put in when the cover was rescued from a store room, where it had laid for years, covered with dust and several coats of paint. There is a beautiful modern wrought-iron bracket fixed to the west wall of the church, from which the cover is suspended. There is a poor-box in the church of very similar character to the font cover, which bears the date 1600 and the names of the churchwardens at that time.

Knaresborough Church dates back to a Norman foundation. It is mentioned in Hargrove's "History of Knaresborough" that in 1114 it was given to the Priory of Nostel (near Pontefract). In 1230 Archbishop Walter Grey united it to the Prebend of Bickhill. The piers supporting the tower seem to have been erected about the middle of the twelfth century, and in the chapel on the south side of the chancel there is much work of about the end of the twelfth and the beginning of the thirteenth century, viz., an oggee piscina, sedilia (double) and a recessed canopy which formerly contained the recumbent effigy of a knight. There is a beautiful arch on the west side of the chapel enriched by dog-tooth ornament. The chapel is lighted by a simple Early English window and on the east by a Decorated one. There was at one time a shrine in the chapel, and there is now a niche which evidently contained the figure of some Saint. This chapel was formerly owned by the Plumpton family, now extinct; it is now held by the Roundell family.

On the opposite side of the chancel is the Slingsby Chapel, which contained two good Geometrical windows and some fine monuments. One is a beautiful altar tomb on which are the recumbent effigies of Sir Francis Slingsby and his lady. The date upon it is 1600. The nave, which is very lofty, is fifteenth century work throughout.

The tower is of the same period and is surmounted by a modern spire.

THE INSTITUTION OF HEATING AND VENTILATING ENGINEERS (INCORPORATED).

THE annual General Meeting of the above Institution was held at the Trocadero Restaurant, Piccadilly Circus, on Tuesday, February 14. The president, Mr. C. Ingham Haden, was in the chair.

The minutes of the last meeting, held October 18, 1910, were read by the Secretary and confirmed by the meeting. The report and balance sheet were adopted. There were twelve new members elected, thirteen associates, one member re-elected, and two transfers from associate to full membership.

The new president, Mr. O. M. Row, M.I.Mech.E., of Irlam, Manchester, was inducted to the chair by the retiring president, and the Presidential address was given.

A paper was read by Mr. John H. Blizard, A.M.Inst.C.E., F.R.I.B.A., of Southampton, on the "Ventilation and Heating of Public Buildings in their relation to the Prevention of Tuberculosis." An address was given by Mr. W. H. Hurtley, D.Sc., of St. Bartholomew's Hospital, London, on "The Air of Inhabited Rooms with Special Reference to Dust" and a "Case of Corrosion by Water of the Hot-Water Pipes at a Sanatorium."

The paper and address were full of interest and well received by the meeting, discussions taking place on both.

The dates of future meetings were fixed as follows:—Summer meeting at Chester, July 3 and 4; Autumnal meeting, October 17, at the Institution of Mechanical Engineers, Storey's Gate, London, S.W., and the annual meeting in London on February 6, 1912.

BUILDING TRADES EXHIBITION, OLYMPIA.

THE ninth biennial Building Trades Exhibition will be opened on Saturday, April 22, by Mr. Leonard Stokes, President of the Royal Institute of British Architects, and will close on May 6.

No more successful event is associated with Olympia than the Building Trades Exhibition, organised every two years by Messrs. H. Greville & Hugh C. Montgomery. Indeed, we doubt whether there is another Exhibition which can in the same way fill the huge building at Addison Road—main hall, annexe and galleries—from end to end with exhibits strictly germane to the industry immediately concerned. As before, the galleries will be found to constitute a municipal section for the special benefit of borough surveyors and engineers; whilst the whole of the ground floor is devoted to the multifarious requirements of the architect and builder. The wall which used to separate the main hall from the annexe

has recently been removed, the result being that the stand will run continuously from the entrance in Addison Road to the exit in Blythe Road.

Arrangements are being completed for official visits of numbers of the many associations and societies connected with the building industry, and there is no doubt that the Exhibition of 1911 will be an even greater success than any of its predecessors.

THE HYGIENIC ASPECTS OF GAS LIGHTING AND HEATING.

THE current issue of "The Medical Magazine" contains an interesting and valuable report of some experiments recently carried out at the Lewisham Infirmary by the medical superintendent, Dr. F. S. Toogood, for the purpose (1) of comparing hygienically the relative values of the open fire and the gas radiator as heating agents; (2) of ascertaining whether and to what extent the atmosphere of a room affected by incandescent gas burners and lamps; and (3) of ascertaining the hygienic value of the gas fire. This report by an independent scientist on matters that are frequently in controversy between interested parties will be welcomed by the public who are only interested in getting at the truth on a subject of very general domestic and commercial importance.

Full details are given of the numerous tests made, and will be found valuable by all who are desirous of close investigation of the subject. It is sufficient here to give Dr. Toogood's general conclusions, which state that these experiments may be regarded as having proved conclusively:

(1) That in both large and small apartments which have normal means of ventilation, gas consumed in modern incandescent burners can be used for lighting without any detriment to health, being found, in fact, to assist ventilation by the increased circulation of the air.

(2) That a gas fire, properly constructed and fixed, not only does not vitiate the air, but is a valuable adjunct to the ventilation of the room. Its advantages in the sick room in respect of its reliability, avoidance of noise, freedom from dust-producing propensities, and saving of both work and anxiety—are obvious.

(3) That in large rooms, adequately ventilated, flueless gas stoves can be used for heating without any hygienic disadvantages, the heated products of combustion (mainly CO₂ and water vapour) ascending quickly above breathing level. This method of heating—by radiation and convection from flueless gas stoves—is economical, but proper ventilation of the buildings in which it is adopted is essential, which, of course, is also the case whatever means of heating be adopted. A ward or other public building in which gas radiators cannot be used with advantage is improperly ventilated.

These conclusions, confirming as they do those arrived at by Dr. Rideal, published in the "Journal of the Royal Sanitary Institute," No. 2 (1908), will be welcomed by the public as showing that gas, which they know to be cheap and convenient, is not unhygienic when used in a rational and normal manner.

THE Windsor Town Council have under consideration a proposal "that the house No. 11 Church Street, which belongs to the Corporation, should be pulled down and new municipal offices erected at a cost between 700 l. and 1,000 l."

THE Hooton (Cheshire) Education Committee have agreed that a new school, to provide accommodation for 400 children should be provided for the Bebington and Storeton districts. The committee also appointed an architect for the school at Willaston, which is to accommodate 170 children.

THE Oxfordshire County Council have agreed that application be made to the Local Government Board for the sanction to the raising of a loan for educational purposes for a new Council School and teacher's house at Sonning Common to the amount of 2,300 l. the repayment to be spread over 5 years, at 3½ per cent. interest.

A LOCAL GOVERNMENT BOARD inquiry was held last week into the application of the Liverpool City Council for further borrowing powers of 200,000 l. The money is to be expended during the next ten years on street improvements, chiefly on the outskirts. Mr. J. A. Brodie, city engineer, said the policy of the city had been to widen all the roads from the centre of the city to the outskirts to at least 60 feet, and in the outskirts, where land had not been built on and the cost of widening was therefore much less, the general policy had been to widen to at least 80 feet. In latter years a number of streets had been made 90, 100, 108, and in one case 114 feet wide.

THE EVOLUTION OF FIRE-RESISTING CONSTRUCTION.*

(Continued from last week.)

The previous paper was followed by an interesting discussion. W. H. Lascelles referred to warehouses gutted by fire, where slabs consisting of concrete with pieces of iron, three inches by a quarter of an inch, embedded in the centre, were not affected by fire, although the cills and other parts were. The concrete was mixed in the proportion of one of cement to six of breeze. Mr. P. Brannon was a great believer in iron and concrete, and made window heads by bedding rods of angle-iron and discharging with any framing or brasssummers. He had then put concrete doors in St. Paul's Cathedral, under Mr. Penrose, in order to render fire-proof that portion of the dome to which the public have access. Mr. Brannon had then built some stages in Derbyshire where the concrete walls were made of the "slag of furnaces ground with selenitic lime," the compound being "nearly as good as Portland cement concrete." Drake, at the same meeting, was most earnest in his partiality to concrete in floors, roofs, and staircases, and he asserted that Portland cement concrete, or good selenitic concrete, or old lime concrete, correctly treated, "will never either contract or expand in the smallest degree after having once set." J. Tull stated, at the same meeting, that slag from the blast furnaces was an excellent material because it is easily crushed and furnishes in the crushing a sharp grit. He did not approve of iron in concrete floors. His first attempt was with an upper room 19 feet by 13 feet without any iron joists; his second attempt was with a drawing-room floor 40 feet by 16 feet, and he contended that that floor is stronger without iron than it could be with it. The thickness of the floor was 11 inches reduced to 4½ inches in the middle, and he believed there was not a crack or blemish to be found in the whole. Major Seddon, Royal Engineers, made some important remarks on concrete. He was not so much afraid of the work being scamped, as of failures arising from the ignorance of the contractor or his workmen. He had a slab of concrete made 6 inches thick and 6 feet 6 inches by 13 feet 6 inches clear of the supports, which were 14-inch brick walls, and after twenty-one days' setting thirty men marched on to it, who marked time at the quick and double, and then jumped upon it altogether, without having any effect whatever upon the concrete. The whole of the unsupported part of the slab was then loaded with bricks, until an evenly distributed load of 10½ tons was piled upon it, when it gave way suddenly. The major stated that no iron whatever had been used in any of the concrete floors designed by him, as he "preferred using iron where he knew what work it was doing within certain limits," whereas, "when iron is embedded in concrete, no one can determine the relative proportion of the work which falls to the share of the iron and the concrete respectively." Mr. Aitchison was desirous that experiments should be tried with and without the iron, "to show whether any or what additional strength is gained," and Mr. Arthur Cates made some interesting references to the work of Mr. Brannon in which the cupola of St. Paul's was made fire resisting. Mr. Payne (the author of the Paper) agreed with Mr. Charles Barry that "if concrete fails it fails suddenly and disastrously." It will be observed that I have generally used the term fire-resisting "instead of "fire-proof," as examples of large failures prove that at the present moment there is nothing which has been invented to make a building "fire-proof." The most we can do is to so construct our buildings as to minimise as much as possible the risk from fire and smoke.

The London County Council General Powers Act, 1909, now enables skeleton framed structures to be erected, at the same time permitting the reduction in the thickness of external walls under the Act of 1894; and so far as I have been able to judge, the anticipatory objections to the provisions of that Act have been modified, and it seems to work well and does not entail those delays and interferences which some members of the profession thought would be likely to arise.

We may now conclude that fire-resisting material has come to stay with us, and I think we may congratulate ourselves on the practical immunity from accident as regards that construction in this country. Before coming to the most modern of fire-resisting constructions, viz., "Reinforced Concrete," I propose to say a few words on other methods. There is the plain and simple rolled iron or steel joists, some three feet apart, laid in between with concrete or breeze and Portland cement. Its demands centering, and at times trouble is caused by the radiation of moisture just when it is not wanted. One of the

early floors, which still holds its own, is what is known as "Dennett & Ingle's." The steel joists are from 4 feet to 10 feet apart, according to the particular form of construction; in some cases the concrete is with arched and in others with horizontal soffits; each method lends itself to either joists on plates bearing on the concrete, to wood block flooring, and to soffits either plastered on the concrete direct, or with ceiling joists and lath and plaster in the usual way. The material is concrete composed of highly calcined gypsum and broken brick, or of Portland cement and an aggregate of broken brick and gravel. This method demands temporary centering. Messrs. Dennett & Ingle recommend the avoidance of coke breeze as an aggregate as being unsuitable, either from the point of view of strength or fire-proof qualities. Messrs. Dennett & Ingle instituted a series of experiments for the encasement of stanchions, columns and to girders which proved to be most successful. Many buildings where Dennett & Ingle's construction was used have caught fire, and I believe that in every case the fire was localised in consequence of this form of construction and much valuable property saved. Amongst the many buildings provided with Dennett & Ingle's floors are the Foreign Office, Royal Courts of Justice, St. Thomas's Hospital, National Gallery, asylums, and theatres.

We then get to the various forms of fire-resisting floors consisting of brick or tile arches between iron or steel joists, different forms of terra-cotta laid on the joists and carrying concrete, such as the Frazzi floor—all doing away with the necessity for centering, which is an important matter, not only on the ground of expense, but for the fact that centering keeps back moisture and rather lends itself to careless filling in on the part of the workman. The terra-cotta of these patent floors is made so that it can easily and accurately be laid in lengths between the steel joists and the soffits plastered afterwards. The objection to them is that the terra-cotta is somewhat brittle and fragile in substance, and requires care in handling and in knocking nails in it. These floors are, however, commendable, and are being made—and the system is also much used in partitions—so that nails can be knocked in the terra-cotta without enlarged fractures. I think also that they are as fire-resisting as could be wished.

(To be concluded.)

VARIETIES.

THE Forfar Presbytery has accepted an offer to erect within the parish of Forfar a memorial church with from 600 to 800 sittings, hall and manse.

THE Salford Town Council has adopted a resolution sanctioning an application to the Local Government Board for permission to borrow 7,944*l.* to defray the cost of erecting a slab-making plant at the Agecroft refuse destructor depot.

ARCHITECTS resident or practising within a radius of 20 miles round Sale, desirous of submitting designs for public baths, are requested to send in their names to the Clerk not later than Friday, February 24. It is intended to make a selection of architects, who will be invited to submit competitive plans.

THE approved alternative design prepared by Mr. J. H. McGovern, architect, 26 North John Street, Liverpool, for the erection of a church in the Classic style, at an estimated cost of 5,000*l.*, in Parkfield Road, Liverpool, for the Methodist New Connexion is postponed in consequence of a suggestion by one of the committee "that a cheaper site could be obtained at Garston."

THE Seaham Harbour Dock Company have decided to erect new coal staithes and spouts at the South Dock, and they have instructed Messrs. P. A. Mudd & Co., of West Hartlepool and Newcastle, to prepare the designs and to supervise the carrying out of the work. The extensions will consist of approach railway bridges leading on to steelwork coal staithes 600 feet long and 48 feet high, carrying four railway lines. The estimated cost of the work is 22,000*l.*

THE Holne Cultram Urban District Council's (Cumberland) consulting engineers, Messrs. Henry Adams & Son, of 60 Queen Victoria Street, London, E.C., have reported that the sea wall and concrete apron at Silloth, about 1,400 yards long, carried out under the first contract, has now been satisfactorily completed, and application has been made to the Local Government Board to sanction a loan in connection with the proposed extension for about 1,000 yards, which is to be carried out as soon as possible.

THE Berkshire County Council at their last meeting had before them a report and plans prepared by the County Surveyor of Hampshire, in conjunction with the County Surveyor of Berks, for a new bridge in three brick semi-elliptical

* A paper by Mr. William Woodward, F.R.I.B.A., read at the ordinary general meeting of the Surveyors' Institution, on Monday, Feb. 6.

arches at the county boundary, Newtown, the estimated cost of which is 2,400*l.*, and an alternative scheme for a bridge of brick with concrete pier and wing walls with ferro-concrete platform and oak parapet rail for 2,200*l.* The new bridge will occupy the site of a portion of the existing bridge. It was decided to erect it in brickwork.

MESSRS. DOUGLAS YOUNG & Co., surveyors and auctioneers, 51 Coleman St., E.C., ask us to call attention to the sale of the complete fittings of a fine oak-room in The Grange, High Road, Kilburn. This is a genuine panelled room of the Georgian period, containing some finely executed carvings in an excellent state of preservation. The sale will take place on Wednesday, March 8. The room may be viewed privately by appointment on application to the auctioneers.

THE monthly meeting of the Council of the London Master Builders' Association was held at Koh-i-Noor House, Kingsway, W.C., on the 16th inst., under the chairmanship of Mr. Leonard Horner (president). The audited accounts for 1910 were received from the finance committee and will be submitted to the general meeting on Monday, the 27th inst. The organisation committee's report was received, and although the matter is proceeding slowly, those districts that have been taken in hand have produced good results, and many builders have become members. It is now hoped to proceed with the work of organisation much faster. Other matters of interest were discussed.

A NEW aspect of co-partnership in trade has been the subject of a vote amongst the Amalgamated Carpenters and Joiners, and a recommendation to add a clause to the rules prohibiting members from working under a co-partnership system when provision is made for operatives to hold only a minority of the shares in the concern has been carried by a majority of 10,195. The Council, alluding to the subject, say they believe a co-partnership based on the principle of the employing class holding the majority of the shares to be pernicious, demoralising, and enslaving to the workmen. They also declare that past experience has shown that one of the main objects of such movements has been the breaking up of trade unions.

THE Incorporated Society for Promoting the Enlargement, Building and Repairing of Churches and Chapels held its usual monthly meeting on Thursday, February 16, at the Society's house, 7 Dean's Yard, Westminster Abbey, S.W., the Rev. Canon C. F. Norman in the chair. Grants of money were made in aid of the following objects, viz.:—Building new churches at Clapham Common, the Holy Spirit, Surrey, 200*l.*; Llanelly, S. Alban, Carmarthen, 100*l.* for the first portion and Purlwell, S. Andrew, Eatley, Yorks., 200*l.*; rebuilding the church at Hensingham, S. John, Cumberland, 75*l.*; and towards enlarging or otherwise improving the accommodation in the churches at Bermondsey, Christ Church, Surrey, 40*l.*; Branscombe, S. Winifred, Devon, 50*l.*; Plumstead, Church of the Ascension, Kent, 80*l.*; Spitalfields, Christ Church, Middlesex, 40*l.*; Norton-juxta-Malton, S. Peter, Yorks., 100*l.*; and Walton-on-the-Hill, S. Mary, Lancs., 100*l.* A grant of 20*l.* was also made from the Special Mission Buildings Fund towards building a mission church at Burstow, Surrey. The following grants were also paid for works completed:—Llanddewi, S. David, North Wales, 20*l.*; Wittersham, S. John the Baptist, Kent, 40*l.*; East Thorpe, S. Mary, Essex, 40*l.*; Chelsea Old Church, Middlesex, 75*l.*; Longcott, S. Mary the Virgin, Berks., 15*l.*; Newton Heath, S. Wilfrid (Rossall School Mission), Manchester, 140*l.*; Llanelly, S. Elli, Brecons, 40*l.*; Natland, S. Mark, near Kendal, 70*l.*; and Shacklewell, S. Barnabas (Merchant Taylors' School Mission), Middlesex, 50*l.* In addition to this the sum of 265*l.* was paid towards the repairs of 16 churches from trust funds held by the Society. The annual general court of the Society will be held at the Church House on Thursday, May 18, when the Bishop of Salisbury has consented to take the chair.

TRADE NOTES.

MESSRS. R. WAYGOOD & Co., LTD. (established 1833 in the reign of King William IV.), have received the royal warrant of appointment as lift makers to H.M. King George V. A similar warrant of appointment was held by R. Waygood & Co., Ltd., from H.M. King Edward VII. and Her Majesty the late Queen Victoria.

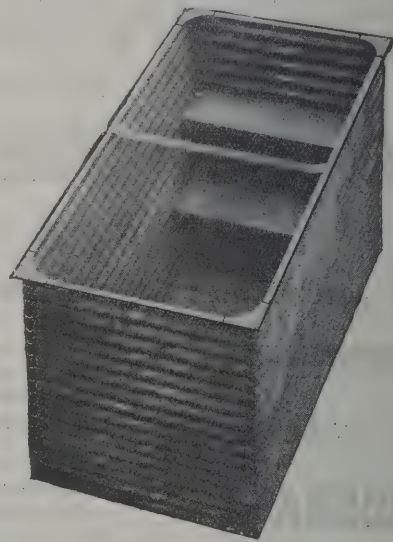
MESSRS. PECKETT & SONS, locomotive engineers, Atlas Locomotive Works, St. George, Bristol, have just issued an interesting book of views showing their workshops, with a few examples of their locomotives. The Atlas Works are on an imposing scale, having a covered area of 101,800 square feet, and there is a further eight acres for future extension. The works are a model of what an up-to-date engineering

establishment should be, and have the rare advantage being conducted under the immediate supervision of the proprietors. All the machinery installed is of the most modern type, and additions to the plant are constantly being made. Locomotives are turned out of all sizes and gauges special-constructed for main and branch lines, contractors, iron works, brick and cement works, &c. Locomotives of various sizes are always in stock ready for immediate delivery.

MESSRS. W. POTTS & SONS, of Leeds and Newcastle, have recently installed a turret clock and chimes at Ebchester parish church; a set of six bells and chiming apparatus at Birtley parish church, and a clock with 6-feet illuminated dial at the premises of Messrs. Knight & Forster, printer, Water Lane, Leeds. The firm have instructions from the borough surveyor to erect a four-dial turret clock at Holbeck Gardens, Scarborough.

A NEW patent method of making thin partition walls at a small outlay is brought to our notice by the agent Messrs. Joseph Griggs & Co., Ltd., Loughborough, under the name of "Stability" Construction. "Stability" Construction walls or partitions are formed of a combination of brick blocks, special wire, and cement. Both faces of the blocks are provided with horizontal and vertical grooves, arranged that when in position they form continuous grooves running from top to bottom, and from end to end of the wall or partition. The cement mortar used in erecting must be a good mixture, which will set thoroughly hard. After the blocks are in position the requisite number of wires are cut, according to the width and height of the structure. They are then placed in the grooves and held in position where necessary, with small bell staples. The partition is then finished with a thin coating of cement. It is pointed out that the blocks escape the disadvantages of many partitions now on the market. They are neither weak in regard to side-thrust or compression, nor made of combustible materials, nor capable of harbouring vermin. "Stability" Construction is economical, fire and sound proof.

THE use of mechanically-propelled vehicles, both for pleasure and business purposes, is now almost universal. It has become necessary therefore that provision be made in private houses and business premises for their proper storage. An important feature of the inevitable motor house is the inspection pit. Until the introduction of the "Luna" Patent Steel Inspection Pit, brick pits were deemed sufficient although not infrequently they proved to be far from water-tight. The accompanying illustration shows the "Luna"



pit. The sides are made of corrugated steel sheets heavily galvanised on both sides after manufacture. They are bent by special process to form the corners, and there is no possibility of leakage. The bottom is of steel strengthened by angle irons. Two steel steps and a light movable wooden floor (to give a comfortable foothold) complete the inspection pit. No foundation is required, all that is necessary being a hole dug large enough to hold the pit into which it is lowered and the ground filled in round it. The stay shown in the illustration is then removed. The makers, Messrs. Pemsel & Wilson, Ltd., of Hemel Hempstead, adopt a standard size of 6 feet long by 3 feet wide and 4 feet deep, but other sizes can be supplied when required. That this pit is both watertight and non-corrodible was proved on examination of one fitted at Messrs. G. B. Kent & Sons' works, where the ground at two feet depth is water-logged. After three years without receiving any attention it is in perfect condition.

THE Architect and Contract Reporter.

FRIDAY, MARCH 3, 1911.

Published weekly, subscription 19s. per annum for Great Britain; and for Colonial and Foreign subscriptions £1 6s. 6d. All business communications to the Managing Director,

P. A. GILBERT WOOD,

Publishing Offices, 6-11 Imperial Buildings, Ludgate Circus, London, England.

Telephone No. 4725 Holborn.

Branch Offices at 43 OLD QUEEN STREET, S.W., Messrs. W. HAY FIELDING & CO. being the representatives for all business purposes.

The Birmingham Offices are at 102 COLMORE ROW.

Entered in the United States of America as second-class matter.

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The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit the insertion of lengthy communications.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

As great disappointment is frequently expressed at the nonappearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

ARGENTINE.—April 20.—A competition of plans for a hospital and school of medicine, to be erected at Rosario in celebration of the Argentine Centenary at a cost of about 149,000l. Prizes of 1,050l., 700l. and 440l. will be awarded. A copy of the conditions, &c., may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, London, E.C., where also a limited number of copies are available for distribution. Plans must be sent to the "Secretaria de la Comisión Pro-Hospital é Instituto de Enseñanza Médica del Centenario, Calle Córdoba 1230," Rosario.

ATHENS.—Aug. 21.—An international competition of plans is invited by the Greek Ministry of the Interior (Public Works) for the erection of a Court of Justice at Athens. The cost of the building must not exceed 160,000l. A first prize of 800l., and a second prize of 320l. will be awarded. The Greek Official Gazette, containing particulars (in Greek and in French) may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

BRADFORD.—May 1.—The Board of Management of the Bradford Infirmary invite plans with estimates for a new infirmary in Duckworth Lane. Mr. Keith D. Young, F.R.I.B.A., will act as assessor. Deposit 3l. 3s., which will be refunded on receipt of a bona-fide design or if block plan, instructions, &c., are returned within a month after receipt of replies to competitors' questions. The Secretary Superintendent of the Royal Infirmary, Bradford. (For further particulars see advertisement, January 13.)

COVENTRY.—April 1.—The Corporation contemplate the erection of municipal offices in the centre of the city, and also possibly a town hall, and accordingly invite competitive designs. Mr. E. Guy Dawber, F.R.I.B.A., will act as assessor. Deposit 2l. 2s., which will be refunded on receipt

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a bona-fide design or if the particulars are returned within fourteen days of receipt. Mr. Geo. Sutton, town clerk, 10 Hay Lane, Coventry. (For further particulars see advertisement, November 18.)

CUBA.—April 15.—An international competition has been arranged for a Presidential Palace to be erected at Havana at a cost of about 205,000l. Premiums of 10,000 pesos and 100 pesos will be awarded. Conditions may be seen at the Cuban Legation, 3 Grosvenor Mansions, Victoria Street, W., or the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

LOWESTOFT.—The Education Committee invite architects practising or residing in Norfolk and Suffolk to submit designs for an elementary school. Premiums of twenty, ten, and five guineas. Particulars may be had on payment of 5s. from Mr. R. Beattie Nicholson, town clerk, Town Hall, Lowestoft. For further particulars see advertisement, Feb. 10.

MANCHESTER.—March 31.—The Corporation invite designs for a Library and Art Gallery upon the Piccadilly site in the centre of the city. The Preliminary Competition closes March 31. The authors of ten selected designs will compete in the Final Competition. Mr. Reginald Blomfield, F.R.A., will act as assessor, in connection with the city architect. Apply for particulars to Mr. Thomas Hudson, Town Clerk, Town Hall, Manchester. (For further particulars see advertisement, January 6.)

ROCHDALE.—March 6.—The Guardians invite competitive plans for a home accommodating forty nurses. Apply to Mr. R. Leach, Union Clerk Rochdale.

ROMFORD.—The Town Planning and Modern House and Cottage Exhibition at Gidea Park, Squirrels Heath, in the Romford Garden Suburb, summer 1911. Class IV.—Town plan of Gidea Park—prizes of 100l. and 50l. Class VII.—Open to builders. For excellence of workmanship and construction in the erection of a cottage in Class I. or II.—First prize, gold medal and 100l.; second prize, 50l. Final dates for designs; Class IV., March 31, 1911. Mr. Michael Cunney, A.R.I.B.A., hon secretary, 33 Henrietta Street, Strand, W.C.

SOUTHAMPTON.—The Council of Hartley University College invite designs for the proposed new buildings. Mr. T. Hare, F.R.I.B.A., will act as assessor. The deposit of 1l. 1s. with the application will be returned if the conditions are returned within fourteen days. Mr. D. Kiddle, Registrar, Hartley University College, Southampton.

SOUTH MOOR.—March 15.—Competitive designs are invited for parochial hall and institute at St. George's Church, South Moor. Cost not to exceed 1,500l. Premiums of 15l. and 5l. will be awarded. Particulars from Rev. F. S. Myers, South Moor, Stanley, S.O., Durham.

SWINTON.—The Vicar and Churchwardens of Swinton (Rotherham) invite plans, &c., for erection of a parish hall and other buildings. Full particulars on application to Rev. C. Steele, Swinton Vicarage, Rotherham.

CONTRACTS OPEN.

BELFAST.—March 6.—For erection of business premises, Lancaster Street, Belfast, for Messrs. Gracey Bros. Mr. John Seeds, architect, 7, Donegall Square West, Belfast.

BINGLEY.—For all trades required in erection of additions to the Technical School. Mr. H. Bottomley, surveyor, Town Hall, Bingley, Yorks.

BIGGLESWADE.—March 15.—For erection of a power station and attendant's house and other works connected therewith, for the Biggleswade Urban District Council. Deposit 3l. 3s. deposit by March 10 to the Surveyor to the Council, Market Place, Biggleswade.

BLACKHILL AND SHOTLEY BRIDGE.—March 7.—For the several works required in alterations and additions to business premises in Derwent Street, Blackhill, also for extensive alterations to branch premises at Shotley Bridge, for the Onsett Industrial and Provident Society, Ltd. Mr. W. B. Barron, architect, 3 West View, Blackhill.

BOLTON.—March 13.—For erection of special school in Lash Street. Deposit 1l. 1s. Mr. Fred Wilkinson, director of education, Education Offices, Nelson Square, Bolton.

BRIDGWATER.—March 7.—For erection of a court house and police station on site in Northgate, Bridgwater. Deposit 2l. 2s. The Borough Surveyor, Municipal Buildings, High Street.

CARDIFF.—For erection of a block of office buildings in West Bute Street, Cardiff Docks. Send names and 2l. 2s. deposit to Mr. Henry Budgen, F.R.I.B.A., 95 St. Mary Street, Cardiff.

CARLISLE.—For the whole of the work in connection with proposed improvements to out-offices, &c., to Caldbeck Upton and Ainstable Council schools. The Clerk of Works (Mr. I. Forster), 13, Earl Street, Carlisle.

CHASE TOWN.—March 11.—For erection and completion of a Council school for 258 infants at Chase Town, near Walsall. Send names and 1l. 1s. deposit by March 11 to Mr. Graham Balfour, director of education, County Education Offices, Stafford.

CLAYTON-LE-MOORS.—March 8.—For erection of elementary school at Clayton-le-Moors, near Accrington, to accommodate 810 scholars, with special rooms for the teaching of manual instruction, cookery, and laundry work, &c. Deposit 2l. Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

CLEETHORPES.—For erection of proposed three houses and shops, Market Place. Mr. E. Huskinson, architect and surveyor, 39, Cambridge Street, Cleethorpes, Lincs.

CLIFTON.—March 4.—For any of the various works required in the erection of house and loose boxes and yard offices for 20 horses at Clifton, Cumberland, for Mr. R. W. Armstrong. Send names and addresses, stating trades required, before March 4, to Mr. J. H. Martindale, F.R.I.B.A., architect, Eaglesfield Abbey Rooms, Castle Street, Carlisle.

COVENTRY.—March 13.—For work comprised in building a governor house at the Gas Street works of internal dimensions of 51 ft. by 27 ft. by 22 ft. high to eaves, and basement for the same, together with the taking down of buildings now upon the site. Deposit 1l. 1s. Mr. Fletcher W. Stevenson, engineer and general manager, Gas Works, Coventry.

CUDWORTH (YORKS).—March 7.—For the construction, delivery and erection of the following for the Cudworth Urban District Council:—Contract No. 1, retort house, meter and exhaustor house, tar well, gasholder tank, and sundry foundations; contract No. 4, 10-ton waggon weighing machine. Deposit 1l. 1s. Messrs. Thomas Newbigging & Son, engineers, 5, Norfolk Street, Manchester.

DURHAM.—March 7.—For erection of sanitary additions to the Shire Hall. Mr. W. Crozier, county surveyor and architect, Shire Hall, Durham.

EARLESTOWN (LANCS).—For erection of additions to the Conservative Club premises, with assembly hall and caretaker's house, at Earle Street. Messrs. Robert Curran & Son, architects, Cairo Street, Warrington.

EDINBURGH.—March 6.—For the erection of porter's room at Gatekeeper's Lodge, City Hospital, Coniston Road. Mr. James A. Williamson, A.R.I.B.A., City Chambers, Edinburgh.

EDINBURGH.—March 6.—For the several works required in the erection of the Usher Hall on site at Lothian Road, for the Corporation. The works for which tenders are invited consist of demolition of old buildings, mason and brick work, carpenter and joiner work, smith work, plumber work, plaster and concrete work, glazier work, tile-layer work, roof asphalt work, painter work, electric lighting. Messrs. Stockdale, Harrison & Sons & Thomson, architects, 7 St. Martin's East, Leicester. Deposit 2l. 2s. for each schedule. Mr. J. A. Williamson, A.R.I.B.A., city superintendent of works, City Chambers, Edinburgh.

EDINBURGH.—March 8.—For the whole works connected with the taking down of the old Golf Pavilion in Portobello Park, and removal and re-erection of same at Powderhall Bowling Green. Mr. James A. Williamson, A.R.I.B.A., City Chambers, Edinburgh.

ELLAND.—March 11.—For the various works required in erection of a detached residence at Elland, Yorks. Mr. F. F. Beaumont, architect, Southgate Chambers, Halifax.

GREETLAND.—March 18.—For various trades required in alteration of premises into stabling for 20 horses at Greetland, Halifax. Messrs. Chas. F. L. Horsfall & Son, architects, Lord Street Chambers, Halifax.

HARROW-ON-THE-HILL.—March 11.—For erection of conveniences, shelters, stores, &c., at the Recreation Ground. Deposit 1l. Mr. J. Percy Bennetts, engineer and surveyor, Council Offices, Harrow.

HESSLE.—March 7.—For alterations and additions to the houses and buildings, and the erection of fences at the Swiss Farm, Hessle, Yorks, for the Small Holdings and Allotments Committee of the East Riding County Council. Mr. John Bickersteth, clerk, County Hall, Beverley.

HULL.—March 17.—For the steel roof work required in the reconstruction of the Madeley Street Baths. The work consists of eight curved trusses, 49 ft. span, and weighs, with

purlins, about 18 tons. Deposit 1*l.* Mr. A. E. White, M.I.C.E., city engineer, Town Hall, Hull.

IPSWICH.—March 28.—For erection of a disinfecting chamber and clothes store at St. John's Home. Send names by March 8 to Mr. J. A. Scheuermann, architect, Northgate Street, Ipswich.

IPSWICH.—March 9.—For erection of an attendant's lodge, shelter, and stable, in Gippeswyk Park. Mr. E. Buckam, borough surveyor, Town Hall, Ipswich.

IRELAND.—For erection of cottages in Blarney Street, Cork. Mr. H. W. Flanagan, B.E., B.A., architect, 2, South Mall, Cork.

IRELAND.—March 6.—For the alteration of Bank premises at Kingstown, co. Dublin. Deposit 2*l.* 2*s.* Messrs. Blackwood & Jury, architects, Belfast. Messrs. C. H. Stevens & Sons, 13 Donegall Square North, Belfast.

IRELAND.—March 10.—For the building of a wall and erection of a gate to enclose a parcel of land next to the existing burial ground at Confey, near Leixlip. Mr. F. Shortt, clerk, Workhouse, Celbridge.

ISLE OF WIGHT.—March 8.—For construction of new timber groyne, for Ventnor Urban District Council. Mr. H. Hughes Oakes, engineer and surveyor, Town Hall, Ventnor, Isle of Wight.

LEEMING.—March 4.—For new out-offices at Leeming Council School, North Riding. The Inspector of Buildings, County Hall, Northallerton.

LONDON.—March 17.—The Commissioners of H.M. Works and Public Buildings invite tenders for the execution of maintenance work to the buildings in their charge in London (South District) for a period of three years from April 1, 1911. Deposit 1*l.* 1*s.* H.M. Office of Works, &c., Storey's Gate, Westminster, S.W.

LONDON.—March 17.—The Commissioners of H.M. Works and Public Buildings invite tenders for the execution of maintenance work to the buildings in their charge in London (North District) for a period of three years from April 1, 1911. Deposit 1*l.* 1*s.* H.M. Office of Works, &c., Storey's Gate, Westminster, S.W.

LONDON.—April 3.—For building new drill hall premises, Mitcham Road, Croydon, for the Territorial Force Association of the County of Surrey. Messrs. Jarvis & Richards, architects to the Association, 10, Queen Anne's Gate, Westminster, S.W. Send names and 1*l.* 1*s.* deposit by March 22 to Messrs. Robinson & Roods, quantity surveyors, 8 New Court, Carey Street, Lincoln's Inn, W.C.

MACCLESFIELD.—For proposed improvements to St. Peter's Church Schools. Mr. Jabez Wright, architect, 27, King Edward Street, Macclesfield.

MIDDLESBROUGH.—March 4.—For erection and completion of a wing and extensive alterations and additions, at the Linthorpe Certified Industrial School. Mr. S. E. Burgess, M.I.C.E., borough engineer and surveyor, Municipal Buildings, Middlesbrough.

MORLEY.—For the various works required in erection of Territorial Headquarters for the 4th K.O.Y.L.I., Ackroyd Street, Morley, Yorks, for the West Riding County Association Territorial Forces. Send names to Mr. A. E. Kirk, A.R.I.B.A., 63, Albion Street, Leeds.

NAB WOOD.—For the several works required in erection of a house at Nab Wood, Bradford. Forward names to Messrs. Empsall & Clarkson, architects and surveyors, 7, Exchange, Bradford.

NORTHFLEET.—March 14.—For the re-erection and enlargement of the fire station at The Hill. The District Surveyor, The Hill, Northfleet.

NORMANTON.—March 6.—For the following works at Haw Hill Park, viz.:—Erection of caretaker's lodge, two conveniences, and two boundary walls, and construction of cold frames; provision and erection of wrought iron boundary fence and gates; provision and erection of bandstand and shelter; provision of 30 ornamental and 25 plain seats; construction of street, about 200 yards in length, and for the erection of a shelter and convenience at Smirthwaite Recreation Ground. Mr. A. Hartley, architect and surveyor, Council Offices, Normanton.

NORWICH.—March 6.—For erection of an underground convenience in Earham Road. Deposit 5*l.* Mr. Arthur E. Collins, M.I.C.E., city engineer, Guildhall, Norwich.

SCOTLAND.—March 7.—For all departments of work necessary in erection of a manse at Carr Bridge, Duthil, Inverness. Mr. A. Cattnach, architect, Carr Bridge.

SCOTLAND.—March 22.—The Secretary of State for War invites tenders for the following work:—The erection of new barrack block for four non-commissioned officers and 160 men and one block of troop stables at Castle Park Barracks,

Dunbar, in the Scottish Command. Send names and 10*s.* deposit by March 10 to the Director of Barrack Construction, 80 Pall Mall, London, S.W.

SHEFFIELD.—March 8.—For the whole of the works required in taking down old buildings and erection of new central premises in Ecclesall Road and Cemetery Road. Send names by March 8 to Mr. H. L. Paterson, A.R.I.B.A., architect, 19, St. James' Street, Sheffield.

SILLOTH.—For building, plastering, painting, and slating in three houses, Caldew Street. Apply to Mr. Wm. English, coal agent, Silloth, Cumberland.

SKIPTON.—March 4.—For erection of gate and fence walling at the sewage farm. Mr. A. E. W. Aldridge, surveyor to the Council, Town Hall, Skipton.

SLAITHWAITE.—March 9.—For erection of one dwelling-house in Longlands Road, Slaithwaite, Yorks. Mr. Arthur Shaw, architect, Golcar.

SOWERBY BRIDGE.—March 14.—For the excavator's, mason's, bricklayer's, plumber's, slater's, and plasterer's trades in erection of proposed store, Bolton Brow. Sowerby Bridge Industrial Society, Ltd., Carlton Street, Sowerby Bridge, Yorks.

TAMWORTH.—March 11.—For erection and completion of a high school for 120 girls, with laboratory, assembly hall, cookery-room, staff rooms, caretaker's quarters, &c., at Tamworth, Staffordshire. Send names and 1*l.* 1*s.* deposit by March 11 to Mr. Graham Balfour, director of education, County Education Offices, Stafford.

WALES.—March 9.—For erection of the following works at Maesmarchog, Onllwyn, near Neath, for Mr. E. Evans Bevan, Neath, viz.:—(1) Fourteen cottages and boundaries; (2) one detached manager's house; (3) roads and surface water drains. Messrs. Richards & Kaye, architects, Pontypridd and Cardiff, and at the Onllwyn Colliery Offices, Onllwyn.

WALES.—March 9.—For rebuilding No. 97, High Street, Merthyr. Mr. C. M. Davies, M.S.A., 112, High Street, Merthyr Tydfil.

WALES.—March 13.—For erection of two small holding cottages and outbuildings at Shordley, in the Parish of Hope. Mr. S. Evans, F.S.I., county surveyor, Mold.

WALES.—March 13.—For extensions at the Brynmawr County Schools. Deposit 2*l.* 2*s.* Mr. F. R. Bates, architect, 26 Westgate Chambers, Newport, Mon.

WALES.—March 14.—For the reconstruction of Bethel Welsh Calvinistic Methodist Church, New Tredegar, Mon. Deposit 1*l.* 1*s.* Messrs. Habershon, Fawcner & Co., architects, 41, High Street, Newport.

WALES.—March 18.—For the following works for the Monmouthshire Education Committee:—(1) Erection of a new mixed and infants' Council school to accommodate 550 children at Ynysddu, Mon.; (2) extensions and alterations to the Tredegar County intermediate school, Tredegar, Mon.; (3) extensions and alterations to the Pengam Council school, Pengam, Mon. Deposit 1*l.* 1*s.* each contract. Mr. J. Bain, F.R.I.B.A., County Council Offices, Newport.

WALES.—March 18.—For taking down Nos. 35 and 36, High Street, Merthyr, and erecting on site new shop premises, with billiard saloons over, for the Merthyr Billiard and Recreation Co. Mr. T. Edmund Rees, architect, Merthyr Tydfil.

WALES.—March 18.—For erection of house and addition to shop premises at Merthyr Road, Penydarren, Merthyr. Mr. T. E. Rees, architect, Merthyr Tydfil.

WALES.—March 31.—For new schools at Gellifaelog for 1,150 children, for the Merthyr Tydfil Education Committee, viz.: (1) Infants' school for 450 children, (2) boys' school for 350 children, (3) girls' school for 350 children, (4) manual instruction and combined domestic science block, (5) playground, drainage, &c. Deposit 5*l.* 5*s.* Mr. J. Ll. Smith, M.S.A., architect, Aberdare.

WARLEY.—March 13.—For the various works required in erection of detached house, &c., near Norton Towers, Warley, Halifax. Messrs. Medley Hall & Son, architects, 1, Harrison Road, Halifax.

WARRINGTON.—March 10.—For the enlargement of the school of art, in Museum Street. Mr. S. P. Silcock, architect, 6, Egypt Street, Warrington.

WEST HAM.—March 14.—For the following works, for the West Ham Town Council:—(1) Erection of addition to tramway car sheds, Greengate Street, Plaistow; (2) construction of a bridge, about 60 feet span, for single line of traffic, Cook's Road, Stratford. Deposit 1*l.* for each contract. Mr. J. G. Morley, borough engineer, Town Hall, West Ham, E.

WHITTINGHAM.—March 8.—The Committee of Visitors for Whittingham Asylum are about to erect a new annexe on the Whittingham Asylum Estate, near Preston, costing

from 120,000*l.* to 130,000*l.* Contractors desirous of tendering must send in their names and addresses on or before March 8. Contractors must be in *bonâ-fide* business in Lancashire and ratepayers in the county. Mr. Leonard Cotman, clerk, 8, Lune Street, Preston.

WORSBROUGH BRIDGE (YORKS).—March 6.—For the whole or any portion of the works required in connection with erection of seven houses and shop. Mr. A. Whitaker, architect and surveyor, Kingwell Close, Worsbrough Dale, near Barnsley.

TENDERS.

BEESTON.

For works required in erection of a cloth warehouse and offices at New Mills. Mr. T. A. BUTTERY, F.I.A.S., architect, Morley and Leeds.

Accepted tenders.

Spensley, mason	-	-	-	-	£545 14 0
Clegg & Sons, joiners	-	-	-	-	636 0 0
A. Clegg, plumber	-	-	-	-	86 10 0
Horsfield, Ltd., Dewsbury, ironfounders	-	-	-	-	73 19 0
Rogerson, slater	-	-	-	-	65 5 0
Crossley & Sons, Birstall, plasterers	-	-	-	-	44 0 0

CROYDON.

For the erection of a Lecture Hall in Whitgift Street, Croydon. Mr. GERALD E. BURGESS, architect, Swanley, Kent.

Page	-	-	-	-	£762 0 0
Everitt	-	-	-	-	707 10 0
Smith & Sons	-	-	-	-	643 10 0
BLAY, Ltd. Dartford (accepted)	-	-	-	-	639 0 0

HULL.

For Presbyterian schools, Anlaby Road. Mr. F. BROWNLOW THOMPSON, architect, Hull.

Knowles	-	-	-	-	£2,819 0 0
Hill & Stephenson	-	-	-	-	2,801 12 0
Railton	-	-	-	-	2,750 0 0
Marsden & Son	-	-	-	-	2,745 0 0
Levitt	-	-	-	-	2,730 10 0
J. Houlton & Son	-	-	-	-	2,640 0 0
G. Houlton & Son	-	-	-	-	2,640 0 0
Harper	-	-	-	-	2,606 0 0
Bilton	-	-	-	-	2,597 1 11
Fenwick & Son	-	-	-	-	2,592 0 0
Taylor & Son	-	-	-	-	2,583 0 0
QUIBELL, SON, & GREENWOOD, Hull (accepted)	-	-	-	-	2,552 0 0

IRELAND.

For the rebuilding of Portumna Bridge, over the River Shannon, and reconstruction of approaches. Mr. J. O. MOYNAN, county surveyor, Nenagh.

Head, Wrightson & Co.	-	-	-	-	£38,855 10 10
Keay & Co.	-	-	-	-	35,977 8 10
Eastwood, Swingler & Co.	-	-	-	-	35,534 0 2
Butler & Co.	-	-	-	-	34,739 12 5
Morton & Co.	-	-	-	-	34,570 1 6
Braithwaite & Kirk	-	-	-	-	34,512 0 0
Muirhead & Co.	-	-	-	-	33,000 0 0
Moran & Son	-	-	-	-	32,393 16 8
Orr, Watt & Co.	-	-	-	-	32,152 17 0
Arrol & Co.	-	-	-	-	32,054 17 6
Findlay & Co.	-	-	-	-	31,577 14 0
H. & J. Martin	-	-	-	-	29,523 19 6
Motherwell Bridge Co.	-	-	-	-	28,750 0 0
Finch & Co.	-	-	-	-	27,942 17 8
Main & Co.	-	-	-	-	27,403 0 0
Brandon Bridge Co.	-	-	-	-	26,747 7 4
Cleveland Bridge Co.	-	-	-	-	24,068 18 8
HEENAN & FROUDE, Manchester (accepted)	-	-	-	-	21,499 0 0

ISLE OF WIGHT.

For the erection of pumping-station buildings, &c., at Roan Meadow, Chillerton, for Shanklin Urban District Council. Mr. E. C. COOPER, engineer, Shanklin.

Streeter & Co.	-	-	-	-	£1,111 0 0
Williams	-	-	-	-	923 0 0
KINGSWELL, Shanklin (accepted)	-	-	-	-	893 10 0

LIVERPOOL.

For reconstructing drainage and new water closets to dwelling-houses, Nos. 28 to 46 Brainerd Street, and altering water supply, supplying new baths, &c., to dwelling-houses Nos. 1 to 21 Rockhouse Street, for Mr. H. Stacey. Mr. J. H. MCGOVERN, architect, Liverpool.

CALDERBANK & SON (accepted)	-	-	-	-	£262 3 0
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LONDON.

For the supply and erection of a penstock and dam required for the southern low-level sewer No. 2 in St. Mark's Road, Lambeth, for the L.C.C.

Glenfield & Kennedy	-	-	-	-	£508 0 0
Blakeborough & Sons	-	-	-	-	500 0 0
Cochrane	-	-	-	-	425 0 0
Markham & Co., Chesterfield (recommended)	-	-	-	-	369 10 0

For the erection of a house for the first assistant medical officer at Hanwell Asylum, for the L.C.C.

Lawrance & Sons	-	-	-	-	£1,323 0 0
Leslie & Co.	-	-	-	-	1,179 0 0
Greenwood	-	-	-	-	1,186 0 0
Lovatt	-	-	-	-	1,148 0 0
Higgs & Hill	-	-	-	-	1,124 0 0
Dickens	-	-	-	-	1,110 0 0
Dorey & Co.	-	-	-	-	1,045 0 0
Brown & Son	-	-	-	-	997 0 0
Willis	-	-	-	-	929 6 5
PLAISTOWE, South Road, Southall (accepted)	-	-	-	-	919 0 0

For the erection of a handicraft centre for 20 boys on the Shelburne Road site (Islington).

Treasure & Son	-	-	-	-	£979 0 0
Bull	-	-	-	-	927 0 0
McLaughlin & Harvey	-	-	-	-	916 0 0
Roberts & Co.	-	-	-	-	890 0 0
Patman & Fotheringham	-	-	-	-	841 0 0
Lawrence & Sons	-	-	-	-	831 0 0
Johnson & Co., Wandsworth Common (recommended)	-	-	-	-	813 0 0
Architect's estimate	-	-	-	-	853 0 0

For the erection of the wiring and the supply of fittings in installing electric light at the Wandsworth fire station.

Fryer & Co.	-	-	-	-	£190 0 0
Malcolm & Allan	-	-	-	-	174 0 0
Alex. Hawkins & Sons, 125-128 London Road, S.E. (recommended)	-	-	-	-	157 10 0
Chief engineer's estimate	-	-	-	-	180 0 0

For certain painting work at Deptford pumping-station, for the L.C.C.

Beeley	-	-	-	-	£864 17 7
Loasby	-	-	-	-	772 0 0
Dudley	-	-	-	-	696 11 11
Wollaston & Co.	-	-	-	-	553 0 0
Inns	-	-	-	-	538 0 0
Vigor & Co.	-	-	-	-	531 0 0
Brown & Son	-	-	-	-	526 18 3
Bailey	-	-	-	-	519 19 11
Lole & Co.	-	-	-	-	514 1 6
Hudgell	-	-	-	-	500 17 11
Proctor & Sons, Plumstead, S.E.	-	-	-	-	487 9 7
H. E. Townsend (trading as Townsends) (recommended)	-	-	-	-	474 14 5

For the supply and erection of new gates at the three entrances to Victoria Park, for the L.C.C.

White	-	-	-	-	£693 0 0
Brooker	-	-	-	-	605 0 0
Elliott's Moulding and Joinery Company	-	-	-	-	540 0 0
Rowland Brothers	-	-	-	-	407 2 6

MACCLESFIELD.

For alterations at the Macclesfield General Infirmary.

Clayton Bros.	-	-	-	-	£515 0 0
Lawton	-	-	-	-	520 0 0
Gorton & Wilson	-	-	-	-	492 0 0
Simpson & Son	-	-	-	-	480 0 0
Clayton	-	-	-	-	476 0 0
Cooke & Son	-	-	-	-	464 0 0
ROYLANCE & Co., Ltd. (accepted)	-	-	-	-	450 0 0

MARGATE.

For enlargement and alterations to the Albemarle Hotel. Messrs. E. R. ROBSON & GOTT, architects.

Parkinson & Sons	-	-	-	-	£2,414 0 0
Blake	-	-	-	-	2,296 0 0
Wallis & Sons, Ltd.	-	-	-	-	1,994 0 0
Paramor & Sons	-	-	-	-	1,955 0 0
Woodhalls & Son	-	-	-	-	1,931 10 0
Lockwood & Co.	-	-	-	-	1,875 0 0
Bowchier	-	-	-	-	1,875 0 0
Martin	-	-	-	-	1,819 0 0
Doughty	-	-	-	-	1,737 5 7



CHATEAU LAURIER HOTEL, OTTAWA, CANADA.

MALTON.

For the erection of an elementary school at Norton, Malton.

Accepted tenders.

Gibson, excavating, draining, bricklaying, mason work, plastering	£2,688	4	6
Fairweather & Sons, carpentry and joining	1,109	6	6
Rushworth, plumbing and glazing	359	0	0
Dawler, slating	318	0	0
Oxtoby & Sons, painting	54	14	8

OXFORD.

For erection in Guiting stone of County offices in New Road. Mr. SIDNEY STALLARD, county surveyor, Oxford.

Foster & Dicksee	£8,733	0	0
Parnell & Son	8,600	0	0
Estcourt & Sons	8,534	0	0
Hughes	8,410	0	0
Simms & Son	8,243	0	0
Hutchins & Sons	8,201	0	0
Kimberley	8,100	0	0
Hunt & Son	7,887	0	0
Beardsmore & West	7,882	0	0
Franklin	7,871	0	0
Kingerlee & Son	7,797	0	0
Benfield & Loxley	7,557	0	0
Hacksley Bros.	7,527	0	0
Wyatt & Son	7,500	0	0
WOOLDRIDGE & SIMPSON, Oxford (accepted)	7,300	0	0

ROCHESTER.

For the reconstruction of Rochester Bridge.

Pearson & Son, Ltd.	£91,942	0	0
Aird & Co.	88,736	3	4
Head, Wrightson & Co.	78,000	0	0
Sir W. Arrol & Co.	75,317	6	6
Handyside & Co.	66,000	0	0
Westwood & Co.	64,184	0	0
COCHRAN & SON (accepted)	64,041	9	10

STOTFOLD.

For the erection of a pair of villas at Stotfold, Baldock, Herts, for Mr. Searle. Mr. THOMAS COCKRILL, A.M.Inst.C.E., architect, 8 Bank Buildings, Bedford, and Biggleswade.

Redhouse & Son	£537	0	0
Turner	517	0	0
Dear	472	0	0
MORRIS & SON (accepted)	455	0	0

SOUTHAMPTON.

For additions to the pavilion, Royal Pier, for the Harbour Board. Mr. E. COOPER POOLE, A.M.Inst.C.E., Engineer and Surveyor to the Board.

Grace	£705	0	0
Stevens & Co.	690	0	0
Osman & Co.	687	0	0
Jenkins & Sons, Ltd.	683	0	0
Daysh	678	0	0
Franklin & Co., Ltd.	670	0	0
Douglas	634	0	0
J. NICOL, Southampton (accepted)	630	0	0

SUTTON.

For the erection of narthex, porch, and baptistery to Christ church, Sutton, Surrey. Mr. DOUGLASS G. ROUND, architect, Adelphi Terrace House, Strand, W.C.

Shopland & Co.	£2,888	0	0
Freeman, Ltd.	2,825	0	0
Mead	2,751	10	0
Carmichael	2,796	0	0
Saunders	2,465	0	0
Minter	2,379	0	0
Dove Bros.	2,350	0	0
JONES & SONS, Sutton (accepted)	2,217	0	0

WALES.

For the erection of eighteen semi-detached villas, Treforest, for the Forest Building Club. Messrs. GIBSON, PARRY, WILLIAMS & Co., architects and surveyors, Pontypridd.

Jones Bros.	£8,640	0	0
R. Jones	8,370	0	0
Williams & James	8,190	0	0
Oliver	8,010	0	0
Webb & Sons	7,920	0	0
HARRY, Radyr (accepted)	7,569	9	0

For the construction of a stone lifeboat house and reinforced concrete (Considere system) slipway at Port Namarve, near Machrihanish, Argyllshire, for the Royal National Lifeboat Institution. Mr. W. T. DOUGLASS, M.I.C.E., engineer, 15 Queen Victoria Street, Westminster, S.W.

White & Co.	£3,478	14	3
Exors, of J. Arundel	2,195	13	9
Scott, Marshall & Co.	1,857	17	0
ADAMS & Co., Glasgow (accepted)	1,833	17	11



ADMINISTRATIVE BLOCK, MELBOURNE TOWN HALL.—Messrs. GRAINGER & LITTLE, Architects, Melbourne.

WALES—continued.

For erection of infants' school at Pentrebach (248 scholars), for the Education Committee.

Lloyd	£7,042	14	8
Jenkins Bros.	4,459	14	0
Davies & Son	4,400	0	0
James	4,350	0	0
Sullivan	4,002	16	0
Moss	3,969	11	0
Jones Bros.	3,890	0	0
Colborne	3,749	10	0
WILLIAMS & SON, Dowlais (accepted)	3,759	0	0

For the erection of house at Aberdovey. Mr. J. HOWARTH, architect, Towyn and Barmouth.

Hughes & Edwards	£910	0	0
Morgan	868	0	0
Jones	850	0	0
Hughes	825	0	0
Lewis	789	0	0
R. JONES & SON, Towyn (accepted)	779	10	0

WEST HAM.

For the extension of the sanitary convenience at Custom House, for the Borough Council.

Nightingale	£800	0	0
Doulton & Co.	627	0	0
Burns & Co.	600	0	0
Thomas & Edge	598	0	0
Webb & Co.	597	0	0
Mason & Co.	580	0	0
Luton	547	0	0
Jerram	537	0	0
Woollaston & Co.	529	0	0
Newell & Lusty	524	0	0
Roberts & Co.	520	0	0
Wood Bros.	498	0	0
Symes	497	0	0
Horswill	456	0	0
Lown & Co.	449	10	0
A. WEBB, Stratford (accepted)	429	0	0

WEEDON BEC.

For alterations and additions to the Church schools. Messrs. LAW & HARRIS, architects, Northampton.

Cosford	£1,778	0	0
Marsh	1,775	8	0
Green	1,674	0	0
Archer & Sons	1,665	0	0
Heath	1,625	0	0
Martin	1,594	0	0
Heap	1,589	0	0
Webster	1,553	0	0
Harris & Harris	1,549	0	0
Higgins	1,538	0	0
Souster	1,533	0	0
Ratledge	1,529	0	0
BEARDSMORE & WEST, Northampton (accepted)	1,518	0	0

THE CHATEAU LAURIER, OTTAWA, CANADA.

THE "Château Laurier" at Ottawa, which is owned and operated by the Grand Trunk Railway system, is splendidly situated in Major's Hill Park. It faces to the west the Parliament Buildings and grounds, to the north the Ottawa River, and the grand Laurentian Hills in the Province of Quebec.

It is built in the French château style, in the most approved method of fire-resisting construction. The frame of the building is steel, the walls are of Bedford limestone, surmounted with copper roof, and the whole building presents a picturesque appearance from every view-point.

The hotel contains, in addition to its regular dining-room and café, a ladies' dining-room, banquet room, ballroom, a State suite, and a number of private dining-rooms, as well as three hundred and fifty bedrooms with two hundred and sixty-two private bathrooms. Each bedroom has a front outlook, for there is no courtyard to this hotel, and upon three sides it fronts the beautiful Major's Hill Government Park.

Besides the ordinary entrance to the "Château" from the street, it is connected with the Grand Trunk Railway's new Central Union passenger station by a private passageway.

TRADE MARKS OF CONSTRUCTIVE MANUFACTURERS.

HOLLAND.

Constructive Materials.

"KALKBRANDERY DEN BRIEL" Stoomschelpenzuigery en Schelpkalk-brandery, Brielle.

Colours, Coatings and Various Preservative Compositions.

"BEGOL" Barmen Export Co., Ltd., Unter-Barmen.
 "BADISCHE FREMDE FIRMA" The Baden Aniline and Soda Supply Co., Ludwigshafen-on-Rhine.
 "PALCO" O. Heinrici, Rotterdam.

GERMANY.

Trade Marks published in September and October, 1910:—

Cement.

"SAALE" . . . Portland-Zementwerke "Saale" Co., Granau, near Halle a. S.
 "OSTRIT-PLATTEN" Ostrauer Steinindustrie Franz v. Velt-heim, Ltd., Ostrau.
 "A.H.G." . . . Allgemeine Hochbau-Co., Ltd., Düssel-dorf.
 "LONGUSTA" . . . Gustav Lang, Offenbach a. M.
 "GREIF" . . . Rammelberg & Heicke, Altdamm.
 "LANGUST" . . . Gustav Lang, Offenbach a. M.
 "NONCURRID" . . . Dr. Bormann & Balthasar, Langenöls.

Constructive Materials.

"PROGRESS" . . . Progress Vertriebsgesellschaft Tech-nischer Specialitäten, Ltd., Grune-wald, near Berlin.
 "LIA" . . . Rheinische Chamotte- und Dinawerke, Köln.
 "R.W.Z." . . . Fritz Rücker, Hohl- und Blendstein-Fabrik, Weinsheim, near Worms.
 "CUPOLIT" . . . Gewerkschaft Alexander, Alaunwerk, near Freienwal.
 "LINKO" . . . Dr. Heinrich Linnekogel, Feuerbach-Stuttgart.
 "GLOBUS" . . . Sch. Brügggen, Delitzsch.
 "K.W.N." . . . Kunststeinwerke Niederfinow, Ltd., Berlin.
 "PLATUNO" . . . Heinr. Becker, Düsseldorf.
 "GUHRISUL" . . . Dr. Friedrich Naszger, Hamburg.
 "SORG'S STABIL-WAND" Paul Friedrich Sorg., Strassburg-Neudorf.
 "HYGIEIA" . . . Friedrich Mayer, Schwabach.
 "ERNSTOL" . . . Emil Kuznitzky, Breslau.
 "BITARMAC" . . . Strassenbau-Gesellschaft-Zoeller Wolfers Droege, Berlin.

Trade Marks deposited in Belgium, September and October 1910, not yet published by the Belgian Government:—

Cement.

"LA GUADANA" . . . Bte. Lenain et Co., Antoining.
 (Design)
 "KIWI" (Design) . . . Bte. Lenain et Co., Antoining.
 "AVANTI" . . . Société Anonyme et Co. des Ciments portland, Tournai.
 Design: A lion rampant on a shield with two flags crossed.
 "CLAW BRAND" . . . Société Anonyme et Co. de Ciments Portland, Antoining.
 "TENACIDAD" . . . Joseph Soudan, Ghent.
 Design: Hand holding pincers.
 "JOSSON" . . . Société Anonyme du Niel en Rupell, Niel.

Bitumens and Bituminous Materials.

"CALLENDRITE" . . . George Callender & Co., Ltd., West-minster.
 Design: Lion rampant.

Paints, Colours, Varnishes and Enamels.

"MAYFLOWER" . . . Mayfield Brothers, Sculcoates, near Hull.
 "MAYRESCO" . . . Mayfield Brothers, Sculcoates, near Hull.

Artificial Stone, Mortar, &c.

"TERRASSIT" . . . Terrassit Manufacturing Co., Halensee, Berlin.

MESSRS. PUGIN & PUGIN, architects, have prepared plans for the addition of a sanctuary to St. Joseph's Catholic Church, Cockermouth.

COMPETITION NEWS.

SCOTLAND.—The Council of the Royal Institute of British Architects request the members and licentiatees of the Institute not to take part in the New Cumnock United Free Church Competition.

IRELAND.—The managing committee of the Royal Hos-pital for Incurables, Donnybrook, Dublin, recently invited designs in competition from architects in practice in Dublin for a pavilion for incurable consumptive patients, and additions to the existing hospital. At a meeting of the Building Committee on the 24th ult. the report by Mr. A. William West, the assessor, was adopted. The first prize has been awarded to Messrs. Kaye Parry & Ross (D. 102), 43 Kildare Street; the second to Messrs. Walter Doolin & Butler (D. 106), 12 Dawson Street; and the third to Mr. G. P. Sheridan (D. 101), 1 Suffolk Street.

VARIETIES.

THE Italian *Gazzetta* of February 17 contains a decree granting a sum of 96,000*l.* for the erection of a Central Post Office Savings Bank in Rome.

THE York Education Committee have decided to purchase 7,198 square yards of land in the South Bank district for the purpose of erecting new elementary schools.

THE Governors of Robert Gordon's Technical College, Aberdeen, have approved generally of the extension of the School of Domestic Science, at an estimated cost of 7,000*l.*

A SCHEME has been adopted for the purchase of some land close to the Rectory, at Acton, for the sum of 4,200*l.* It is proposed to erect a large parish hall on the site.

MR. G. H. FELLOWS PRYNNE, architect, Westminster, S.W., has prepared plans for the addition of an operating-room to the St. Barnabas Hospital, Saltash. The local committee are seeking to collect 500*l.* for the purpose.

THE Dean and Chapter of Lincoln have appointed Sir Charles Nicholson, Bart., of 2 New Square, Lincoln's Inn, W.C., as consulting architect of the Cathedral, in succession to the late Mr. C. Hodgson Fowler.

THE Northamptonshire Memorial to King Edward is to take the form of an extension of the County Sanatorium for Consumptives. It is intended to build a new wing, and any surplus will be utilised for endowment and the erection of a memorial tablet.

THE Queensland Appropriation Act for 1910-11 provides for the payment from the Loan Fund Account of 56,200*l.* for public buildings, 19,500*l.* for artesian boring, and 14,500*l.* for wire netting. It further provides, under the heading of the Department of Public Works, for the pay-ment from revenue of 87,376*l.* for buildings.

THE Institution of Municipal Engineers have appointed Mr. Ernest Prescott, the President, and Messrs. Henry C. Adams and H. C. H. Shenton to represent them on the Joint Committee being formed by the Council and the Science Standing Committee of the Concrete Institute to consider the loads that should be provided for in the design of highway bridges.

THE third annual Cement and Concrete Exhibition will be held at Toronto, under the auspices of the Canadian Cement and Concrete Association, from March 6 to 11. The exhibits will comprise cement, cement products, cement-using machinery, cement-testing apparatus, concrete mixers, cement literature, architects' and engineers' plans of struc-tures in which cement is used, &c.

MR. JOSEPH NORRIS, cabinet and chair manufacturer, Hull, has just made the tip-up chairs for the new Brightside and Park Baths, Sheffield, under the city architect; as also the tip-up chairs for the Duke Street Conservative Club, in the same city. Mr. Norris, who makes a speciality of this class of work, has just issued an illustrated tip-up chair catalogue.

A SMALL folder issued by the London and South-Western Railway Company, under the title of "To Pleasant Scenes by Pleasant Means," carries the memory to Devon, Cornwall and the many beauty spots on the sunny south coast between Plymouth and Southsea. The company's excellent railway service to this part of England has kept many people in this country who heretofore thought that the Continent offered the only possible winter resorts. But the Western Riviera is now rapidly attaining the favour it deserves. This movement has been assiduously fostered by the London and South Western Company, who offer fast trains, comfort-able carriages, and low fares.

PREMISES OF MESSRS. W. N. FROY & SONS, LTD.

ON a Thursday morning some eighteen months ago the premises of Messrs. W. N. Froy & Sons, Ltd.; builders' merchants and manufacturers, in King Street, Hammersmith, W., were the scene of a disastrous fire. After some hours of strenuous and perilous work the fire brigade obtained the mastery. But it was not until an area some 250 ft. by 80 ft., or half the entire premises, had been gutted. With most commendable smartness and pluck the firm took immediate steps by which their customers were spared any inconvenience as a consequence of the mishap. The temporary rearrangement of the business was so effective that work went on as if nothing had happened. But in the meantime a great deal was happening, for a contract was quickly entered

marble works, smith shop, glazing shop, &c. In these a number of processes may be seen in operation and lessons learnt in stained glass production, leaded light manufacture, fixing tile-surrounds for fireplaces, and so on.

The showrooms offer a wide range of choice in equipment whether of a hotel or a villa. The great things and the small things are alike waiting to be inspected. A coal box, a central range, or an electric light shade; a chimney-piece, a drain-pipe, or a radiator are equally obtainable, and the choice is equally varied. Yet by the orderly arrangement of everything there is no possibility of bewilderment in the mind of the visitor. The greatest difficulty must be not one of selection, but of rejection.

It is just over sixty years since this business was founded. Messrs. Froy have evidently found the secret of perpetual



into for the reconstruction of the burnt-out portions. And now the public are, with some excusable pride, invited to inspect the Brunswick Works as they have arisen phoenix-like from the ashes.

In this case, at any rate, "good cometh out of evil," for Messrs. Froy boldly seized the opportunity of rebuilding to refurnish and rearrange their many departments, and to put their works on an equal footing with the best of their class in this country. It is now a positive pleasure to go over them if only for the purpose of observing the method, the spotless cleanliness, and the lightness of the new and the old buildings.

Brunswick Works have the initial advantage of extreme accessibility. They are two minutes' walk from Hammersmith Broadway, which is one of London's great traffic centres. On it converge railways, tramway systems, and motor 'bus services, affording ready communication with all parts of the Metropolis. The main front is on King Street, and this thoroughfare is one of the links connecting east and west London. Unlike some businesses, that of Messrs. Froy does not disappoint by having an impressive front and nothing more. On the contrary, though the street facade of four high and broad storeys is in no sense insignificant, yet it does not prepare a visitor for the length and depth awaiting behind. The show rooms alone have a floor area of 21,439 square feet. This again fails to give a proper idea of the spaciousness of the works, for the wall area and the ceiling area ought to be included since they both are turned to good account. One of the most striking impressions made by a tour of the premises is the cunning dexterity shown in utilising every inch, and yet without any annoying sense of overcrowding. The many showrooms are well lighted both by daylight and by electricity.

Apart from the big showrooms there are extensive stores and warehouses as well as leaded glass works, tile warehouse,

youth, and they are now entering on a new phase with all the advantage of mature experience allied to youthful optimism and initiative.

THE new council of Labour representatives of Ruskin College, Oxford, have decided to proceed at once with the rebuilding of the institution. Plans for a handsome block of buildings to accommodate 50 students have been adopted.

THE Rattray U.F. Church, N.B., congregation have adopted plans for a church to be built in Balmoral Road, New Rattray, to seat 400, with a hall to hold 200, and other accommodation. The funds collected amount to 1,042l.

THE Doncaster Race Committee recommend the Corporation to purchase an acre of land behind the Grand Stands, for the erection of a motor garage. Accommodation will be provided for at least three hundred cars, and it is estimated that the cost will be about 4,000l.

MESSRS. ROBERT BRUCE, contractors, Edinburgh, have had their tender accepted by the Admiralty for the construction of the Explosive Works at Crombie, in connection with the Rosyth Naval Base. It is expected that the work will cost 100,000l., and it must be completed in two and a half years.

TENDERS have been invited from twelve firms for the erection of a church at Oxshott, and it is proposed to commence building operations about the middle of March. It has been decided to proceed only with the erection of the chancel, vestries, Lady chapel, and a part of the nave, providing accommodation for about 250 persons. The completion of the nave and the erection of the upper portion of the tower and spire will be carried out when additional accommodation is required. The cost of the work mentioned will amount approximately to 4,000l. Messrs. Caroe & Passmore, Great College Street, Westminster, S.W., are the architects.

THE EVOLUTION OF FIRE-RESISTING CONSTRUCTION.

(Concluded from last week.)

SPEAKING generally, with reference to fire-resisting construction, it is to be regretted that England does not "wake up" more rapidly and bring itself up to the German excellence in steel work. For example, I believe England cannot roll a steel joist with a depth equal to that attained by the Germans; but I think with regard to cast-iron, England holds its own. The perfection to which cast-iron stanchions is now brought, and the enormous weights which they carry, leads one to question whether their continued employment is not superior to steel as regards weight in compression, and that, combined with ordinary steel joists, with either one of the patent floors or ordinary concrete filled in, to my mind brings us as near the perfection of fire-resisting construction as we can hope to attain.

We have all had to do, too, with *wood floors*, and there are still men left who would prefer—in cases of big fires, where the "devouring element," as the penny-a-liner says, has got strong hold—a solid wood floor to all the steel and concrete floors ever invented. Some years back experiments were made with solid wood floors, *i.e.*, wood joists of the usual scantlings, laid close together, side by side, and I think the result of such tests was that these floors would stand concentrated heat better than the steel and concrete floors. I remember watching a fire, some years ago, where the building had a canted angle, and the supporter at each point consisted of a fir post 9 inches by 9 inches. The building was completely gutted, but the fronts were intact, due, I think, to the wood supports, which stood the fire well, and when I inspected them the following day I found that their centre parts had been consumed to within about 3 inches. I doubted very much whether steel stanchions or iron columns would have been left to tell the tale. We all know too that the most deceptive fire-resisting material is stone or granite in staircases, and stonework generally, brickwork and concrete being far more reliable.

The evolution, though, of fire-resisting construction in the form of reinforced concrete may be termed a revolution; because not only do we get it in floors and walls but in piles and girders.

That too much care and attention cannot be given to any form of construction, or the employment of any material which will minimise, if not abolish, the risk from fire goes without saying; and it is this dread of fire in buildings which necessarily alarms those upon whom falls responsibility in case of deaths or injury from fire. Recent occurrences in business premises make one tremble at the thought of fire where women and men sleep in brick houses, and where we know that an outbreak must result in a sad list of deaths. The London County Council have from time to time initiated legislation having for its object the relief of such risks, and they have by a recent Act permitted the use of steel-framed structures which will encourage their use and lead to filling in with fire-resisting material, and so gradually tend to lessen these too frequently recurring accidents.

Enormous strides have recently been made in the manufacture and use of reinforced concrete for all sorts of purposes besides building construction, *viz.*, bridges, staircases, &c., and, personally, I place considerable reliance upon those engineers and architects who have made the subject a study. I know it is said that "Prejudice vanishes when knowledge comes," and if I am, at the moment, prejudiced against the use of reinforced concrete it must be put down to my ignorance, and to a conservatism which should be absent when dealing with inventions. Frenchmen may be said, I think, to have been the pioneers in this form of fire-resisting construction, but an English architect, Professor C. H. Reilly, has just constructed a church, at Dalston, throughout practically of this material, and both in design and appearance, from the illustration I have seen, it does not present any feature of ugliness. I could sleep comparatively happily in a building where the walls and floors are of this material, but a little nervousness would creep over me if I knew that the piers or vertical points of support were of concrete with embedded steel, and that nervousness would be alarmingly increased if I knew that the girders, with a bearing of say 30 or 40 feet, were relied upon to prevent collapse. It would be no comfort to me to be told that provision had been made for ten times the load which could ever be put upon the floor, and I should begin to think of a few matters which tended to upset my equilibrium. We all agree that in the first place great reliance is placed upon the Portland cement used. It should not be too fresh, it should be most finely ground, and it should be laid out on a boarded floor and turned over for a few days before it is used. Is this always secured? Then the proportion in which it is mixed with the aggregate is of moment. Is this always attended to? Of course, in all concrete work great care

is required, and strict supervision necessary; but in the modern work I am afraid the limits are being pushed a little too far. The specification and drawings may be perfect, but the safety of the structure depends upon the mixing of the concrete and the proper and regular embedding of the steel or iron work. Now this mixing is left as a rule to labourers, and although the specified quantity of steel and aggregate may be there, if more of the Portland cement finds its way into one part than should be, and less therefore in another part, I should certainly get nervous if a moving load with consequent vibration were brought to bear on the girder. I am also not clear as to the effect of the concrete on the steel or iron reinforcement. An essential is, of course, perfect dispersion, and from my experience this would in the ordinary way be very difficult to attain.

Then as to expansion and contraction. Some authorities say there is none in this reinforced concrete, but whether that be so or not, is expansion, or contraction, if they do take place—and I think in many cases they do—equal? I mean does the concrete go with the steel, and the steel with the concrete, or does each go its own way? If they do go their own way, then risk is at once present. Then does the steel or iron oxidize? We are told they do not, but we do not know, and I suppose we must wait and see. Directly one of these concrete girders yields to any appreciable extent, then I anticipate complete collapse; concrete is not elastic, and metal is; and, taking into consideration the few above-named queries, the result perhaps of a highly-strung and over-nervous temperament, and without wishing in any way to place my views in opposition to those distinguished architects and engineers who are so freely using this reinforced concrete, I would wish to make this Paper perhaps a little useful by concluding with a few words of caution, which may or may not be acceptable.

First see that you specify the best English Portland cement, and then see that you get it. Let Belgium and Germany keep their Portland cement for themselves. Then see that your Portland cement is not used too fresh, and that it is turned out of the sacks on to a boarded floor for, say, three days, and turned over two or three times in the interval.

Then determine as to your aggregate. Avoid burnt ballast but do not be afraid of well and evenly broken brick mixed with stone ballast, or breeze, quite free from particles of coal. Then do not mind spending a little money on reliable clerks of works. A hundred pounds or so in salaries to such men, simply to supervise the mixing of the materials and the proper disposition of the reinforcement will probably save many thousands of pounds, and many lives.

The evolution of fire-resisting material may apparently know no bounds; it has at the moment culminated in reinforced concrete put now to all sorts of uses. I am only concerned in *buildings*, and as regards these buildings, I should be sorry if a word I said here led to any diminution of the use of reinforced concrete; and I hope that we shall have to-night a good discussion, and that I shall hear enough to make me sleep comfortably at home in an early Georgian house where the joists are of deal, 9 by 2, with a 16-foot bearing. But, Mr. President, may I say one final word to *architects* (I leave engineers to take care of themselves)? Do not tremble at your floors and roofs; be very confident about your walls; be a little over-careful with your piers or other vertical supports; but, but, be over, and doubly, and trebly anxious about your *girders*.

THE Texteth Board of Guardians have adopted a recommendation that a new building should be erected at the rear of the present Public Offices for the accommodation of two medical officers, &c. The cost is expected to be 3,000l.

THE usual lectures on the Architecture and History of the Church of St. Bartholomew the Great, West Smithfield, E.C., are to be given on Saturdays, March 18 and April 1, at 2.30 p.m. The whole of the building will be thrown open without charge, but a collection will be made for the benefit of the Restoration Fund.

THE Kirkcaldy and Dysart Parish Council are considering plans for the proposed extension of Dysart Combination Poorhouse and also for hospital accommodation. The alterations proposed in connection with the former are to the kitchen, washing-house, and laundry, and these would cost 2,103l. Hospital accommodation is also badly required, and this would cost an additional 7,750l. to provide sixty-one beds.

A COMMITTEE of the Belfast Corporation are developing a scheme for the erection of an art gallery and museum worthy of the city. At present the municipal collection is in the Central Free Library. Two sites are under consideration; one is in Botanic Gardens Park and the other is in the Methodist College grounds.

THE
Architect and Contract Reporter.

FRIDAY, MARCH 10, 1911.

Published weekly, subscription 19s. per annum for Great Britain, and for Colonial and Foreign subscriptions £1 6s. 6d. All business communications to the Managing Director,

P. A. GILBERT WOOD,

Publishing Offices, 6-11 Imperial Buildings, Ludgate Circus, London, England.

Telephone No. 4725 Holborn.

Branch Offices at 43 OLD QUEEN STREET, S.W., Messrs. W. HAY FIELDING & CO. being the representatives for all business purposes.

The Birmingham Offices are at 102 COLMORE ROW.

* Entered in the United States of America as second-class matter.

AGENTS FOR AMERICA:

The International News Co., 5 Bream's Buildings, Chancery Lane, London, England, and New York.

AGENTS FOR CANADA:

Messrs. WM. DAWSON & SONS, Ltd., 91 Church Street, Toronto, to whom all correspondence for Subscription and Advertising Rates should be made.

Subscription \$5.20.

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SOUTH AFRICA: Central News Agency, Ltd.

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Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

Special Position Spaces.—Unless ordered for weekly insertions the Proprietors cannot guarantee particular dates.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit the insertion of lengthy communications.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

* As great disappointment is frequently expressed at the nonappearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

ARGENTINE.—April 20.—A competition of plans for a hospital and school of medicine, to be erected at Rosario in celebration of the Argentine Centenary at a cost of about 149,000l. Prizes of 1,050l., 700l. and 440l. will be awarded. A copy of the conditions, &c., may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, London, E.C., where also a limited number of copies are available for distribution. Plans must be sent to the "Secretaria de la Comisión Pro-Hospital é Instituto de Enseñanza Médica del Centenario, Calle Córdoba 1230," Rosario.

ATHENS.—Aug. 21.—An international competition of plans is invited by the Greek Ministry of the Interior (Public Works) for the erection of a Court of Justice at Athens. The cost of the building must not exceed 160,000l. A first prize of 800l., and a second prize of 320l. will be awarded. The Greek Official Gazette, containing particulars (in Greek and in French) may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

BRADFORD.—May 1.—The Board of Management of the Bradford Infirmary invite plans with estimates for a new infirmary in Duckworth Lane. Mr. Keith D. Young, F.R.I.B.A., will act as assessor. Deposit 3l. 3s., which will be refunded on receipt of a bona-fide design or if block plan, instructions, &c., are returned within a month after receipt of replies to competitors' questions. The Secretary Superintendent of the Royal Infirmary, Bradford. (For further particulars see advertisement, January 13.)

CHESTERFIELD.—May 15.—The Standing Joint Committee for Derbyshire invite architects practising in the county to submit designs for a Court-house and lock-up to cost 8,000l. Mr. F. Baggallay, F.R.I.B.A., will act as assessor. Deposit 3l. 3s. Apply to Mr. G. C. Copstick, L.R.I.B.A., County Offices, Derby.

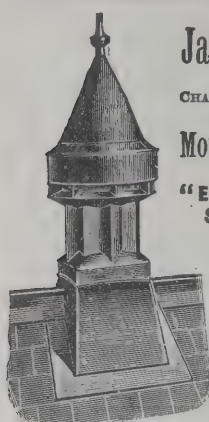
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COVENTRY.—April 1.—The Corporation contemplate the erection of municipal offices in the centre of the city, and also possibly a town hall, and accordingly invite competitive designs. Mr. E. Guy Dawber, F.R.I.B.A., will act as assessor. Deposit 2l. 2s., which will be refunded on receipt of a bona-fide design or if the particulars are returned within fourteen days of receipt. Mr. Geo. Sutton, town clerk, 10 Hay Lane, Coventry. (For further particulars see advertisement, November 18.)

CUBA.—April 15.—An international competition has been arranged for a Presidential Palace to be erected at Havana at a cost of about 205,000l. Premiums of 10,000 pesos and 5,000 pesos will be awarded. Conditions may be seen at the Cuban Legation, 3 Grosvenor Mansions, Victoria Street, S.W., or the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

LOWESTOFT.—The Education Committee invite architects practising or residing in Norfolk and Suffolk to submit designs for an elementary school. Premiums of twenty, ten, and five guineas. Particulars may be had on payment of 5s. from Mr. R. Beattie Nicholson, town clerk, Town Hall, Lowestoft. For further particulars see advertisement, Feb. 10.

MANCHESTER.—March 31.—The Corporation invite designs for a Library and Art Gallery upon the Piccadilly site in the centre of the city. The Preliminary Competition closes March 31. The authors of ten selected designs will compete in the Final Competition. Mr. Reginald Blomfield, A.R.A., will act as assessor, in connection with the city architect. Apply for particulars to Mr. Thomas Hudson, Town Clerk, Town Hall, Manchester. (For further particulars see advertisement, January 6.)

ROMFORD.—The Town Planning and Modern House and Cottage Exhibition at Gidea Park, Squirrels Heath, in the Romford Garden Suburb, summer 1911. Class IV.—Town plan of Gidea Park—prizes of 100l. and 50l. Class VII.—Open to builders. For excellence of workmanship and construction in the erection of a cottage in Class I. or II.—first prize, gold medal and 100l.; second prize, 50l. Final dates for designs; Class IV., March 31, 1911. Mr. Michael Bunney, A.R.I.B.A., hon. secretary, 33 Henrietta Street, Strand, W.C.

SOUTHAMPTON.—The Council of Hartley University College invite designs for the proposed new buildings. Mr. H. T. Hare, F.R.I.B.A., will act as assessor. The deposit of 1l. 1s. with the application will be returned if the conditions are returned within fourteen days. Mr. D. Kiddle, registrar, Hartley University College, Southampton.

SOUTH MOOR.—March 15.—Competitive designs are invited for parochial hall and institute at St. George's Church, South Moor. Cost not to exceed 1,500l. Premiums of 15l. and 5l. will be awarded. Particulars from Rev. F. S. Myers, South Moor, Stanley, S.O., Durham.

WALES.—May 5.—The Corporation of Swansea invite architects to submit designs and estimates for the Castle Street improvement. Deposit 1l. 1s., which will be refunded on receipt of a bona-fide design or if block plan and particulars are returned within a fortnight after receipt. The architect appointed to prepare the working drawings will be paid not more than 250l., and a premium of 50l. will be paid for the second design. Mr. S. S. Reay, F.R.I.B.A., will act as assessor. Apply to the Town Clerk, Guildhall, Swansea.

CONTRACTS OPEN.

ALFRETON.—For building chimney stack, 120 feet high. The Offices, Swanwick Collieries, Alfreton.

BACUP.—March 20.—For erection of a brick urinal in Todmorden Road. Mr. W. H. Elce, A.M.I.C.E., borough engineer, Municipal Offices, Bacup.

BELFAST.—March 16.—For erection of two shops, stores, and dwelling-house at Donegall Road, Belfast, for the Belfast Co-operative Society, Ltd. Deposit 1l. Messrs. McCarthy & Brookes, Scottish Provident Buildings, Belfast.

BOLTON.—March 13.—For erection of special school in Flash Street. Deposit 1l. 1s. Mr. Fred Wilkinson, director of education, Education Offices, Nelson Square, Bolton.

BOSTON.—March 17.—For renewing stonework, &c., to the two chapels at the cemetery. The Borough Surveyor, Municipal Buildings, Boston, Lincs.

BURNLEY.—March 20.—For the adaptation of existing buildings and the construction of new buildings on the site of the Old Barracks, situated at Barrack Road, for the accommodation of the 6th Lancashire Battery 1st East Lancashire Brigade R.F.A., and "C" Section No. 2 Field

Ambulance. Deposit 1l. 1s. Mr. W. Greenwood, A.R.I.B.A., architect and surveyor, Victoria Chambers, Victoria Street, Blackburn.

CARLTON.—March 16.—For alteration and additions to farmhouse at Carlton, Yorks. Messrs. Thorp & Turner, architects and surveyors, Goole.

CHASE TOWN.—March 11.—For erection and completion of a Council school for 258 infants at Chase Town, near Walsall. Send names and 1l. 1s. deposit by March 11 to Mr. Graham Balfour, director of education, County Education Offices, Stafford.

COCKERMOUTH.—March 13.—For the whole or part of the work in connection with the erection of a cricket pavilion at Sandair. Mr. Jas. W. Pooley, surveyor, Cockermouth.

CORNHOLME.—For the various works required in erection of a minister's house at Shore. Mr. J. Earnshaw, architect, Town Hall Buildings, Cornholme, Yorks.

COVENTRY.—March 13.—For work comprised in building a governor house at the Gas Street works of internal dimensions of 51 ft. by 27 ft. by 22 ft. high to eaves, and basement for the same, together with the taking down of buildings now upon the site. Deposit 1l. 1s. Mr. Fletcher W. Stevenson, engineer and general manager, Gas Works, Coventry.

GRAVESEND.—March 17.—For alterations, additions and repairs to 52 Queen Street. The Borough Surveyor's Office, Gravesend.

GREETLAND.—March 18.—For various trades required in alteration of premises into stabling for 20 horses at Greetland, Halifax. Messrs. Chas. F. L. Horsfall & Son, architects, Lord Street Chambers, Halifax.

GRIMSBY.—March 14.—For additional cells at the police station, Town Hall. Deposit 1l. 1s. Mr. H. G. Whyatt, A.M.I.C.E., borough engineer, 170 Victoria Street, Grimsby.

GRIMSBY.—March 15.—For erection of a wooden band stand at the Boulevard, West Marsh. Mr. H. G. Whyatt, A.M.I.C.E., borough engineer and surveyor, 170 Victoria Street, Grimsby.

HALIFAX.—March 20.—For the execution of the mason's, carpenter's, and slater's work required in erection of a barn, mistal, stable, and cart-shed, at Mixenden Green. Deposit 1l. Mr. R. J. Hartley, C.E., waterworks engineer, Gibbet Street, Halifax.

HALIFAX.—March 20.—For the removal and rebuilding of the mortuary and disinfectant house at the Hospitals, Stoney Royd. Deposit 5l. Mr. J. Lord, M.I.C.E., borough engineer, Town Hall, Halifax.

HANDSWORTH (STAFFS.).—March 16.—For the extension of the Rookery Road junior school, for the Handsworth Education Committee. Deposit 2l. 2s. Messrs. Wood & Kendrick, architects, High Street, West Bromwich.

HULL.—March 17.—For the builders' work in the reconstruction of the Madeley Street baths. Mr. A. E. White, M.I.C.E., Town Hall, Hull.

HULL.—March 17.—For the steel roof work required in the reconstruction of the Madeley Street Baths. The work consists of eight curved trusses, 49 ft. span, and weighs with purlins, about 18 tons. Deposit 1l. Mr. A. E. White, M.I.C.E., city engineer, Town Hall, Hull.

IPSWICH.—For erection of a lodge at the Porter's Lodge, East Suffolk and Ipswich Hospital. Send names, accompanied by a deposit of 1l. 1s., to Mr. John Shewell Corder, architect, Wimborne House, Ipswich.

IRELAND.—March 15.—For building twenty-seven single labourers' cottages and fencing plots to be allotted thereto, for the Urlingford No. 1 Rural District Council. Mr. James Walsh, clerk.

IRELAND.—March 20.—For erection of three gate cottages between Keady and Castleblaney, for the Great Northern Railway Co. (Ireland). The Chief Engineer's Office, Amiens Street Terminus, Dublin, and the District Engineer's Office, Belfast.

KEIGHLEY.—For additions to St. Mark's Church, Utley. Messrs. J. B. Bailey & Son, architects, 3 Scott Street, Keighley.

LONDON.—March 14.—For certain plastering work in the "E. and F." ward at the Sick Asylum, Devons Road, Bromley-by-Bow, E. The Engineer and Superintendent of Labour at the Asylum, Devons Road, Bromley-by-Bow, London, E.

LONDON.—March 17.—The Commissioners of H.M. Works and Public Buildings invite tenders for the execution of maintenance work to the buildings in their charge in London (South District) for a period of three years from April 1, 1911. Deposit 1l. 1s. H.M. Office of Works, &c., Storey's Gate, Westminster, S.W.

LONDON.—March 17.—The Commissioners of H.M. Works and Public Buildings invite tenders for the execution of maintenance work to the buildings in their charge in London (North District) for a period of three years from April 1, 1911. Deposit 1*l.* 1*s.* H.M. Office of Works, &c., Storey's Gate, Westminster, S.W.

LONDON.—March 23.—For the work of lathing and slating a roof at the Lambeth Council's depot, Fenwick Place, Landor Road, Stockwell, S.W. Deposit 1*l.* 1*s.* Mr. H. Edwards, C.E., borough engineer, Landor Road, Brixton Hill, S.W.

LONDON.—March 23.—For the provision of fire-escape staircases at the St. John's Hill Infirmary, Wandsworth, S.W. Mr. F. W. Piper, clerk, Union Offices, St. John's Hill, Wandsworth, S.W.

LONDON.—April 3.—For alterations and additions to existing drill-hall premises, St. George's Road, Wimbledon, for the Territorial Force Association of the County of Surrey. Messrs. Jarvis & Richards, architects to the Association, 10 Queen Anne's Gate, Westminster, S.W. Send names and 1*l.* 1*s.* deposit by March 22 to Messrs. Robinson & Roods, quantity surveyors, 8 New Court, Carey Street, Lincoln's Inn, W.C.

LONDON.—April 3.—For building new drill hall premises, Mitcham Road, Croydon, for the Territorial Force Association of the County of Surrey. Messrs. Jarvis & Richards, architects to the Association, 10, Queen Anne's Gate, Westminster, S.W. Send names and 1*l.* 1*s.* deposit by March 22 to Messrs. Robinson & Roods, quantity surveyors, 8 New Court, Carey Street, Lincoln's Inn, W.C.

MANCHESTER.—March 11.—For supply of laboratory fittings at the municipal secondary school, Whitworth Street. Deposit 1*l.* 1*s.* Education Offices, Deansgate, Manchester.

MANCHESTER.—March 18.—For the construction of a chimney 250 feet high and 18 feet 6 inches internal diameter, with lightning conductors, &c., at the Stuart Street generating station, for the Electricity Committee. Send deposit 2*l.* 2*s.* to Mr. F. Hughes, secretary, Electricity Department, Town Hall, Manchester. Messrs. C. S. Allott & Son, civil engineers, 46 Brown Street, Manchester.

MILBORNE.—March 20.—For erection of a Council School at Milborne Port, Somerset. The Committee Room, Victoria Hall, Milborne Port, or Mr. A. J. Picton, Bruton.

MORLEY.—For the various works required in erection of a pavilion at the junction of High Street and South Queen Street. Deposit 1*l.* 1*s.* Messrs. Howarth & Howarth, architects, &c., Old Bank Chambers, Cleckheaton.

MORLEY.—March 16.—For erection of additions to the Homestead at the Churwell Grange Farm. Mr. W. E. Putman, A.M.I.C.E., borough engineer and surveyor, Town Hall, Morley, Yorks.

NEWCASTLE-UPON-TYNE.—For erection of twenty-five cottages on the East Denton Holdings, for the Small Holdings and Allotments Committee. The City Estate and Property Surveyor, Town Hall, Newcastle-upon-Tyne.

NEWCASTLE-UPON-TYNE.—For erection of houses and farm buildings in connection with the schemes of the Small Holdings and Allotments Committee, for the provision of small holdings in the undermentioned districts, viz.:—Amble district, Hope House Farm; Embleton, near Embleton village; North Seaton, Lane End Farm. Send names to Mr. A. P. Ker, county land agent, The Moothall, Newcastle-upon-Tyne.

NORTHFLEET.—March 14.—For the re-erection and enlargement of the fire station at The Hill. The District Surveyor, The Hill, Northfleet.

NORWICH.—For the construction in part of the Duke's Palace Wharf of concrete floors, columns and partitions, reinforced on the Kahn System, for the Electricity Committee. The City Electrical Engineer, Duke Street, Norwich.

OUTLANE.—March 15.—For erection of four dwelling-houses at Outlane, Huddersfield. Mr. J. Berry, architect and surveyor, 3 Market Place, Huddersfield.

PRESCOT.—March 16.—For erection and completion of a general stores at the Workhouse, Whiston. Deposit 1*l.* Mr. J. Gandy, architect, Masonic Buildings, St. Helens.

SALFORD.—March 23.—For pointing, &c., the south side of the Union Infirmary, Hope, Pendleton. Deposit 2*l.* 2*s.* Mr. F. Townson, clerk, Union Offices, Eccles New Road, Salford.

SCOTLAND.—March 14.—For mason, carpenter, plumber, slater, plasterer, and painter works of a villa to be erected in Grantown. Mr. Gilbert, The Square, Grantown.

SELBY.—March 20.—The West Riding Standing Joint Committee invite whole or separate tenders for works in

alterations and additions to Selby Police Station, viz., builder, joiner, slater, plumber, plasterer, painter, asphalter. Send 1*l.* deposit to the West Riding Treasurer, County Hall, Wakefield. Mr. J. Vickers Edwards, West Riding Architect, County Hall, Wakefield.

SOWERBY BRIDGE.—March 14.—For the excavator's, mason's, bricklayer's, plumber's, slater's, and plasterer's trades in erection of proposed store, Bolton Brow. Sowerby Bridge Industrial Society, Ltd., Carlton Street, Sowerby Bridge, Yorks.

SYCHTYN.—March 21.—For the erection of a shop and warehouse for the Co-operative Society, Ltd. Mr. W. E. Chambers, secretary, Violet Cottage, Sychtyn, near Northop.

TAMWORTH.—March 11.—For erection and completion of a high school for 120 girls, with laboratory, assembly hall, cookery-room, staff rooms, caretaker's quarters, &c., at Tamworth, Staffordshire. Send names and 1*l.* 1*s.* deposit by March 11 to Mr. Graham Balfour, director of education, County Education Offices, Stafford.

WALES.—March 13.—For erection of two small holding cottages and outbuildings at Shordley, in the Parish of Hoipe. Mr. S. Evans, F.S.I., county surveyor, Mold.

WALES.—March 13.—For the rebuilding of a part of the shop premises of, and the putting in of a large shop front at Commercial Street, Maesteg. Mr. W. Beddoe Rees, architect, 3 Dumfries Place, Cardiff.

WALES.—March 13.—For extensions at the Brynmawr County Schools. Deposit 2*l.* 2*s.* Mr. F. R. Bates, architect, 26 Westgate Chambers, Newport, Mon.

WALES.—March 13.—For the general builder's work in alterations and repairs to the Town Hall, Pembroke. Deposit 1*l.* 1*s.* The Borough Surveyor, Municipal Offices, Pembroke Dock.

WALES.—March 14.—For the reconstruction of Bethel Welsh Calvinistic Methodist Church, New Tredegar, Mon. Deposit 1*l.* 1*s.* Messrs. Habershon, Fawckner & Co., architects, 41, High Street, Newport.

WALES.—March 15.—For erection of two children's homes at Swansea Road, Llanelly. Deposit 1*l.* 1*s.* Mr. W. Griffiths, F.S.I., Falcon Chambers, Llanelly.

WALES.—March 18.—For erection of a drill-hall and executing certain alterations at the Infirmary, Newtown, for the Montgomeryshire Territorial Force Association. Deposit 1*l.* 1*s.* Mr. R. W. Davies, M.S.A., architect, &c., Carno.

WALES.—March 18.—For erection of twenty or more dwelling-houses at Trelewis, near Treharris, for the Ffaldcaia Building Club. Mr. Treharne Jones, architect and surveyor, Nelson, via Cardiff.

WALES.—March 18.—For the following works for the Monmouthshire Education Committee:—(1) Erection of a new mixed and infants' Council school to accommodate 550 children at Ynysddu, Mon.; (2) extensions and alterations to the Tredegar County intermediate school, Tredegar, Mon.; (3) extensions and alterations to the Pengam Council school, Pengam, Mon. Deposit 1*l.* 1*s.* each contract. Mr. J. Bain, F.R.I.B.A., County Council Offices, Newport.

WALES.—March 18.—For taking down Nos. 35 and 36, High Street, Merthyr, and erecting on site new shop premises, with billiard saloons over, for the Merthyr Billiard and Recreation Co. Mr. T. Edmund Rees, architect, Merthyr Tydfil.

WALES.—March 18.—For erection of house and addition to shop premises at Merthyr Road, Pen-y-darren, Merthyr. Mr. T. E. Rees, architect, Merthyr Tydfil.

WALES.—March 29.—For erection of twelve or more semi-detached houses in Merthyr-mawr Road, Bridgend, for the Glanogwr Building Club. Mr. O. P. Bevan, architect and surveyor, 26 Park Street, Bridgend, and Express Chambers, Merthyr Tydfil.

WALES.—March 31.—For new schools at Gellifaelog for 1,150 children, for the Merthyr Tydfil Education Committee, viz.: (1) Infants' school for 450 children, (2) boys' school for 350 children, (3) girls' school for 350 children, (4) manual instruction and combined domestic science block, (5) playground, drainage, &c. Deposit 5*l.* 5*s.* Mr. J. Ll. Smith, M.S.A., architect, Aberdare.

WARLEY.—March 13.—For the various works required in erection of detached house, &c., near Norton Towers, Warley, Halifax. Messrs. Medley Hall & Son, architects, 1, Harrison Road, Halifax.

WEST HAM.—March 14.—For the following works, for the West Ham Town Council:—(1) Erection of addition to tramway car sheds, Greengate Street, Plaistow; (2) construction of a bridge, about 60 feet span, for single line of traffic, Cook's Road, Stratford. Deposit 1*l.* for each contract. Mr. J. G. Morley, borough engineer, Town Hall, West Ham, E.

WEST HAM.—March 20.—For the supply and erection of galvanised corrugated iron temporary class-rooms at the Custom House school, Freemasons Road, Victoria Docks. Send names and 1*l.* deposit by March 13 to Mr. William Jacques, A.R.I.B.A., architect to the Education Committee, 2 Fen Court, Fenchurch Street, E.C.

WINSFORD.—March 20.—For supply and erection of cattle sheds, pens, sale ring, fencing, and offices and paving, &c., required in the construction of cattle auction. Mr. James Wilkinson, surveyor to the Council, Market Place, Winsford, Cheshire.

YORK.—March 14.—For erection and completion of extensions of the Union Workhouse, Huntingdon Road, consisting of new entrance building, nurses' home, maternity ward, engineer's shop, and conversion of existing entrance building into an official building. Send names and 2*l.* 2*s.* deposit by March 14 to Mr. J. H. Morton, F.R.I.B.A., North-Eastern Bank Chambers, South Shields, and 57 Westgate Road, Newcastle-on-Tyne.

TENDERS.

BELTINGE.

For the erection of a house at Beltinge, Kent. Messrs. ASHDOWN & PRICE, architects, 72 Finsbury Pavement, E.C.

Woolf	£377	0	0
Welby	354	0	0
Ingleton	343	10	0
Head	333	0	0
Amos & Foad	331	17	0
ADAMS (accepted)	277	0	0

BRISTOL.

For the erection of new offices for the North British and Mercantile Insurance Co. at Bristol. Messrs. F. W. WILLS & SON, architects, Bristol. Messrs. Tasker & Sons, surveyors, London.

Dowling	£6,449	0	0
Perkins & Son	6,449	0	0
Cowlin & Son	6,273	0	0
Kidd & Son	6,200	0	0
STEPHENS, BASTOW & Co, Montpelier, Bristol (accepted)	6,177	0	0

CH ELTFEN HA

For the erection of recreation block at the Phthisicalatorium, for the City of Birmingham. Messrs. W. J. WARD, architects, Paradise Street, Birmingham.

Contract No. 1.

Dix	£753	0	0
Collins & Godfrey	527	0	0
Swift	525	0	0
Billings & Sons	524	0	0

Contract No. 2.

Dix	£725	0	0
Collins & Godfrey	511	1	0
Swift	504	0	0
Billings & Sons	496	15	0

DARTFORD.

For painting and repairs at the Staff Quarters of the Infectious Diseases Hospital, for the Joint Hospital Committee. Mr. ROBERT MARCHANT, A.R.I.B.A., architect.

Bayliss	£172	18	2
Mullon & Wallis	170	0	0
Burns & Co.	157	1	0
Ellingham	131	10	0
Sims	129	7	7
Beaven	111	6	3
Milton Bros	99	15	0
Lodge	92	8	0
LINGHAM BROS., Greenhithe (accepted)	91	9	3

HARPENDEN.

For the erection of a house on the St. Nicholas Estate for Mr. F. J. Bolt. Messrs. S. & A. SALISBURY, architects, Harpenden, Herts.

Salisbury & Son	£1,991	0	0
Jarvis	1,850	0	0
Miskin & Sons	1,820	0	0
Dunham	1,790	0	0
Phillips & Blake	1,763	0	0
Dumpleton	1,699	5	0

DROYLSDEN.

For street works in Princess, King and Halcrow Streets.

Mr. C. HALL, surveyor.

Clarke	£1,282	9	10
Fielding	1,279	19	1
Walmsley & Halliwell	1,270	13	9
Farrell	1,241	14	2
Cunliffe	1,198	3	2
Wilson	1,179	11	7
Gosling & Stafford	1,170	7	11
Hobson	1,151	12	8
Edmondson & Wyatt	1,136	0	0
WORTHINGTON, Manchester (accepted)	1,151	3	0

EDMONTON.

For erection of new Technical Institute for the Middlesex County Council. Mr. H. G. CROTHALL, architect to the Education Committee.

E. Lawrence & Sons	£7,161	0	0
Porter	6,871	0	0
Blake	6,850	0	0
Johnson & Co.	6,850	0	0
Rice & Son	6,719	0	0
Treasure & Son	6,700	0	0
Fitch & Cox	6,672	0	0
Knight & Son	6,617	0	0
Neal	6,581	0	0
Brand, Pettitt & Co.	6,542	0	0
Stewart	6,517	0	0
W. Lawrence & Son	6,323	0	0
Fairhead & Son	6,243	0	0
Mattock Bros.	6,133	0	0
MONK (recommended)	6,040	0	0

GOMERSALL.

For works in connection with a new elementary school at Gomersal, for the West Riding Education Committee.

Accepted tenders.

Horkin, Liversedge, builder	£2,257	0	0
Armitage & Sons, Dewsbury, joiners	712	0	0
Scott, Birkenshaw, plumber	405	0	0
Season, Leeds, slater	277	0	0
Crawshaw, Batley, plasterer	200	0	0
Craven, Horsforth, heating	139	0	0
Haigh, Leeds, ironfounder and smith	120	0	0
Porritt, Dewsbury, painter	51	0	0

IRELAND.

For carrying out a drainage system and erecting bath rooms, and other additions at the workhouse, Armagh, for the Guardians.

Graham	£2,900	0	0
McRoberts & Armstrong	2,800	0	0
McDowell & Co.	2,705	0	0
COLLEN, Tandragee (accepted)	2,673	0	0

For erection of a printworks, for the Ulster Printworks, Ltd., at Flush Hall, Newtownards. Mr. ERNEST L. WOODS, C.E., engineer, Bangor. Quantities by Mr. C. S. HUNTER, Belfast.

Hanna & Son	£14,900	0	0
Henry & Son	13,432	0	0
Colville	13,393	0	0
J. & W. Stewart	13,250	0	0
J. & R. Thompson	13,200	0	0
H. & J. Martin	12,950	0	0
Keith	12,700	0	0
Gordon & Son	12,580	0	0
Courtney & Co.	12,293	0	0
Paisley	12,084	0	0
McLaughlin & Harvey	11,998	0	0
Hogg & Son	11,955	0	0
Graham	11,669	0	0
Campbell & Son	11,528	0	0
Thornbury Bros.	11,312	0	0
McIntyre Bros.	11,254	0	0
McRoberts & Henry	11,252	0	0
Corry	10,975	0	0
DOWLING, Belfast (accepted)	10,661	0	0

For the construction of new roads at Shankill, for the Rathdown (No. 1) Rural District Council.

Mosley	£1,080	0	0
Cunniam	975	0	0
Kinlen & Clarke	890	0	0
JOHN MCANENY, Shankill (accepted)	850	0	0

LANCASTER.

For the erection of an elementary school in Dallas Road.
Mr. ARTHUR G. BRADSHAW, borough surveyor.

Accepted tenders.

Dilworth, excavator, mason and bricklayer	£8,392	10	5
Peill & Riley, carpenter and joiner	2,550	0	0
Hall, slater and plasterer	1,007	11	6
Mashiter, jun., asphalter and drainer	821	12	4
Abbott, plumber and glazier	777	7	9
Brash, painter	234	17	6

SWANLEY.

For the erection of a residence for Mr. R. J. Stone upon
Moulton Hill, Swanley. Mr. GERALD E. BURGESS,
architect, 1 Station Road, Swanley Junction, Kent.

Blay	£520	0	0
Ellingham	500	0	0
Fox	455	7	0
Shuter	450	0	0
Buckingham	407	10	0
Walden	390	0	0
Howard	385	0	0

Amended tenders.

Walden	£395	0	0
Buckingham	390	0	0
HOWARD, Orpington (accepted)	386	10	0

WALES.

For the erection of a church at Ammanford. Mr. W. D.
JENKINS, A.R.I.B.A., architect, Llandilo.

Davies	£7,340	0	0
Evans	6,800	0	0
Jones Bros.	6,250	0	0
Mercer	6,248	0	0
Deakin & Greenwood	6,158	0	0
Hayward & Wooster	6,153	0	0
Bridgman & Sons	6,104	0	0
Bloxham	6,097	0	0
Howells & Sons	5,998	0	0
Davies & Sons	5,939	0	0
Stephens, Bastow & Co.	5,871	0	0
Smith	5,671	0	0
COLBORNE, Swindon (accepted)	5,349	0	0

For the erection of an infants' school at Lower Pentlambach,
for Merthyr Tydfil Education Committee. Mr. F.
THACKERAY, deputy borough surveyor.

Lloyd	£7,042	14	8
Jenkins Bros.	4,459	14	0
Davies & Son	4,400	0	0
James	4,350	0	0
Sullivan	4,002	16	0
Moss	3,969	11	0
Jones Bros.	3,890	0	0
WILLIAMS & SON, Dowlais (accepted)	3,759	0	0
Colborne	3,749	10	0

WALTON.

For constructing the Sunbury Lane and Cambridge Road
sewer.

Swaker	£942	13	9
Vinter	774	0	0
Lane	759	3	6
Dick Kerr & Co.	679	0	0
Kavanagh & Co.	587	0	0
Langley & Johnson	569	10	0
Potterton & Co.	543	0	0
Surveyor's estimate	584	1	10

A MOVEMENT has been started by the house joiners of Glasgow for an advance of a penny on their present wage of 9d. per hour. It is pointed out by the men that they have received 10d. per hour in previous years, and now that the shipbuilding trade is good, and trade prospects generally are satisfactory, that they are entitled to once again receive this rate. At present the house joiners are receiving 1l. 17s. 6d. for a 50 hours week, while the shipyard joiners have 1l. 17s. 8½d. for a 54 hours week. If the former obtain the increase of wages sought for they will have 2l. 1s. 8d. per week. Meanwhile the joiners' application has been before their Conciliation Board, a body which was formed in March 1909, and consists of six representatives of the Glasgow Master Wrights' Association, and six representatives of the Executive Committees of the Associated and Amalgamated Societies of Carpenters and Joiners. The Board has adjourned consideration of the question until a meeting to be held on March 23.

LONDON MASTER BUILDERS' ASSOCIATION.

THE Annual General Meeting of the above Association was held in the Council Chamber at Koh-i-Noor House, Kingsway, on Monday, the 27th ult., the President, Mr. L. Horner, occupying the chair.

The minutes of the last General Meeting having been read and confirmed, the annual report of the Council was received and adopted.

The accounts and balance-sheet for the year ended December 31, 1910, were received and adopted.

The following officers were elected for the ensuing year:—
President, Mr. G. Bird Godson; Senior Vice-President, Mr. James S. Holliday; Junior Vice-President, Mr. Walter Lawrence, jun.; Treasurer, Mr. W. F. Wallis, J.P.

The following gentlemen were elected to serve on the Council:—Messrs. W. Downs, T. Hall, J. W. Jerram, E. D. Pratt, H. Smith, F. Thorne, and F. J. Walton.

Mr. C. F. Kearley was elected Hon. Auditor.

The President having acknowledged the honour conferred upon him, proposed a hearty vote of thanks to Mr. Leonard Horner, the retiring President, for the admirable manner in which he had conducted the business of the Association during the past year.

An interesting discussion took place respecting a universal week's holiday for the trade. The President opened the discussion, remarking that, though he admitted that no hard and fast rule could be laid down, as some firms might have urgent work in hand which it would be impossible to leave dormant for a whole week, it was undeniable that business in a builder's office was more or less disorganised through the summer months by one or more members of the staff being away for holidays, whether it was the chief clerk or the office boy; each adds his proportion to the disorganisation. His suggestion for remedying this dislocation of business was to close all works for the first week in August.

The majority of works in progress are already closed from mid-day on the Saturday before the Bank Holiday until the following Thursday morning, leaving a total number of only 23 hours to be subsequently worked to complete the week. By closing down for the whole six days, opportunity would be given for half the staff to take their vacation during the last week in July and the first week in August, the other half commencing on the Saturday before Bank Holiday. By this means, where a fortnight's holiday is the rule, the whole of the holidays are got rid of in three weeks.

It was further contended that if this system was adopted it would be greatly welcomed by the merchants, and possibly by architects and surveyors, and it would also give an opportunity for the outside staff to obtain a week's rest, which, under the present system, they do not get. The matter having been discussed, it was referred for the Council to deal with.

HEATING AND DOMESTIC ENGINEERS' ASSOCIATION FOR BIRMINGHAM AND THE THREE COUNTIES.

At a meeting of engineering employers in the above-named trades, held at Birmingham on March 3, it was resolved to form a branch association of the National Association of Master Heating and Domestic Engineers, to cover Birmingham and the three counties of Warwick, Stafford, and Worcester.

An organising committee was elected, consisting of: Mr. John P. Achurch (Parker, Winder & Achurch, Ltd.), Mr. Charles Barter (Benjamin Parker, Ltd.), Mr. G. N. Guest (Hollings & Guest, Ltd.), Mr. J. Jackson (J. Jackson & Co.), and Mr. W. L. White, 82 Upper Trinity Street, Birmingham, the last-named being convener.

The new branch association is to promote and forward the interests of heating and domestic engineers in the area above-named, and to be affiliated with the National Association, whose headquarters are at 12 Great James Street, Bedford Row, London, W.C. (Mr. H. B. Watt, secretary).

THE finance committee of the Liverpool Corporation have definitely decided not to further entertain the idea of setting back the town hall. The project has been before the committee for several months, having first been brought under their notice by Mr. A. J. Iversen, of Brooklyn, New York. Reports on the subject were obtained from both the Corporation surveyor and the engineer. The committee last week decided not to take the inevitable risk attending the operation.

"THE ARCHITECT" STUDENTS' SKETCHING AND MEASURING CLUB,
MEDIÆVAL ORNAMENT FROM THE ROUND 14TH CENTURY.

*Vaulting Boss from St. Mary's Abbey
York.*



From a Drawing by "LORDS."

AN EXAMPLE OF MEDIÆVAL STONE CARVING.

A SPLENDID example of stone carving of the fourteenth century is to be seen in the above, a boss from the vaulting of the "Calefactory," or warming-house of the Benedictine Abbey of St. Mary, York. The workmanship is vigorous, yet full of delicate modelling and detail, and the resultant light and shade is very refined and subtle. The original is

now carefully preserved in the building called the Hospitium in the grounds of St. Mary's Abbey, York.

THE Carnarvon Guardians have appointed a committee to prepare a report on the best site for the erection of a new infirmary in connection with the workhouse, and submit an estimate of cost of a building to contain forty patients.

L.C.C. PRIZES FOR ARCHITECTURAL AND MUSEUM STUDIES.

THE London County Council offers each year one prize of 10*l.* and two prizes of 5*l.* each for sets of carefully executed drawings of buildings, churches, and artistic objects in museums. The drawings for which the prizes are awarded become the absolute property of the Council. According to the conditions the work must have been executed previous to Easter, 1910, and must not have been submitted in another competition. Notices were inserted in the "London County Council Gazette," and copies of handbills were sent to the schools of art, polytechnics and technical institutes with reference to the award of the prizes for 1911. Fifteen students competed, and the works submitted by them have been examined. One of the two candidates recommended for a prize of 5*l.* was awarded a similar prize in 1910; she has therefore been regarded as ineligible. The examiner reports that the rest of the drawings are not of sufficiently high standard to warrant the second 5*l.* prize being given to any other candidate. Prizes, therefore, of 10*l.* and 5*l.* have been awarded to George C. L. Underwood and Mary Gilbertson respectively, subject, however, in the former case to the following recommendation being approved:—

Regulation No. 870 (a) provides that applicants for these awards should be students in schools or institutes which are maintained or aided by the Council. In 1910, a number of the Council's art scholarship holders were sent to the Royal College of Art, an institution not aided by the Council. The Education Committee think it desirable that the regulations should be altered to include the Council's scholars, whether attending aided or non-aided institutions, and they therefore propose that the existing regulation should be amended, so as to read:—"The Council offers annually one prize of 10*l.* and two prizes of 5*l.* each for museum and architectural studies, executed either (i) by students in schools or institutes which are maintained or aided by the Council, or (ii) by holders of the Council's full-time art scholarships."

THE TOWN PLANNING AGITATION.*

THE discontent naturally engendered and fertilised by constant contact with the abnormal conditions of personal inconvenience, waste, and wreckage which invariably supervene within a state of free competition induces, in all sensitive and cultured minds, firstly, a sentiment of revolt, purely often inarticulate and unformed in its expression, and making no appeal to those who succeed in the general turmoil, but rather exciting acute prejudice and misunderstanding in their midst. The revolt of the cultured mind gathers strength and volume but slowly, and a long and wearisome passage through the wilderness and the desert of the unthinking and prejudiced immediately ensues, for the cultured are few and the enemy is strong. This struggle then assumes a second position, and proposals are made and prospects discussed, and finally a definite advance is made on the enemy's citadel, and the cultured few imagine they have secured an outpost which will bring their uncultured enemies to their knees. This imagined success often leads to a cessation of hostilities, with the result that any concessions made prove entirely futile when achievement appears to be in view, and the proprietors of vested interests, the uncultured, have still to be fought with even more energy and persistence than before, and by an attacking party greatly weakened by the absence of the force of public opinion behind them, which was previously held by that stirring sense of revolt which now disappears before a mere technical expression or a project in law. This rough outline of the general path of reform is fully applicable to the town planning agitation. The atmosphere of discontent to which I have alluded is admirably expressed by the following extract from a leading article of *The Times* published during the time the Town Planning Conference was being held:—

"We find in innumerable instances that the ugliness, the squalor, and the overcrowding which we are now trying to remedy are entirely modern products of commercialism. The old town or village had a grace and spaciousness of its own until the great industrial movement of last century planted raw and hideous sheds upon its open spaces, and made cheap and hurried adaptations of its old buildings to commercial uses. The slums we have to deplore are the result, not of the old leisurely life, but of the haste to be

rich at any cost, and of the crude utilitarianism which sixty years ago was preached as economic gospel."—*The Times* October 18, 1910.

This position is politely admitted, but practically ignored, and although some attempt was made in the technical press to revive the notion of individual effort, and pointed, in my opinion very aptly, to the planning of some of our London squares and to the streets of Bayswater, yet it was felt that those efforts were made when commercialism had not firmly gripped society, and that now when commercialism had a firm hold such efforts in the direction of the improvement of our streets were far less likely to arrive at fruition. We now see clearly that what is anyone's business is no one's business, and that only a bold municipal policy backed by the State purse can overcome the united and strongly entrenched opposition. We recognise that neither by "plucking landlords as brands from the burning" nor by the primary consideration that the planning and architecture of our streets and buildings must not raise the rates can we arrive at the accomplishment of the ideals of civic architecture that the Town Planning Conference has set forth.

The aspects of the main current of social discontent which affect the architectural profession often run an even track up to the point when the query profession or art becomes so pressingly obvious as to demand a complete solution to all members of our profession who have sincerely studied the present, and are resolved, accurately and faithfully, to determine their future line of conduct. It is obvious that the questions of the organisation, disorganisation, or even disintegration of the profession can have but a mere secondary interest to those of us who have decided that art should prevail, for why should we question the means if the end be thus attained? We may sympathetically deplore the loss and wreckage, but we point to the result and the carnage may seem justified.

Unfortunately this position can be consistently and comfortably maintained in those few instances only where social position and a substantial bank balance find themselves in close alliance. The majority of our profession are not so placed. Finding themselves constrained to look closely at the purely professional side of their business, although candidly admitting the right of art to prevail, they are reduced to making terms with the enemy and keeping their cherished beliefs in a state of trepidation when their practice is involved. In no instance is this prevailing state of hesitation so well marked as in the question of town planning, and the conditions of unhealthy compromise between prevailing commercialism and ousted art could not be better illustrated. An abnormal tendency to abhor the practical in favour of the ideal is one of the characteristics of our profession, and is a direct reactionary outcome of the divorce between art and average practice due to this commercial compromise. The motives of the earnest student guilty of elaborate drawings bearing the title, "Design for a Greek Temple on the Verge of a Forest," or "Design for a Cathedral on a Suburban Site," which are met with that quiet smile of self-satisfied complacency so irritating to the culprit are treated in quite an ultra-serious fashion when indulged in by men of professional rank in connection with the town planning.

The initial movement of revolt against the slum and the unholly aspect of our streets was successfully urged by John Ruskin, Thomas Carlyle, and the small but enthusiastic band of enlightened spirits led by Charles Kingsley and Frederick Denison Maurice, and later, as far as its town planning aspect was concerned, by William Morris, whose artistic instincts as a successful designer were severely shocked by the conditions and harshness of the modern town, and who was able by the magnetism of his personality and genius to bring to his standard many varied minds who had imbibed the spirit of discontent and the enthusiasm for his teaching. But still nothing definite was done, and it was not until Mr. Ebenezer Howard drew some circles of a cryptographic character and carried on a curious type of guerilla newspaper war with them that town planning in its modern sense could be said to have had any existence; of course, since then, the architectural lantern slides of Greece and Rome and Paris, which were previously exhibited for quite other purposes, are now found of equal value in illustrating town planning.

Even at this stage the measures passed by our Government, excluding some private Bills, dealt with housing of the working classes and some powers under the Public Health Acts. The corrupt Metropolitan Board of Works did a splendid service for the civic planning of London by

* A paper read by Mr. E. J. Dixon, A.R.I.B.A., at a meeting of the Guild of Architects' Assistants, on March 7.

he carrying out of the Thames Embankment, which must find an "easy" place in any future scheme, and the clearing of many disreputable slums in the route of Charing Cross Road. The London County Council and suburban Councils did much in connection with Kingsway and various ramway improvements, and the opening of churchyards as open spaces for recreative purposes. Still nothing of a definite character in relation to town planning was broached. It is curious to note that architectural societies up to this stage did practically nothing in their own interests or to advance those of the art consigned to their care, but occasionally and perfunctorily stepped in or attempted to step in when the spade work was done instead of being one of the prime movers, and producing and discussing schemes for improvements and submitting them to the consideration of those anxious for light on the subject. In most cases it was left to the civil engineer and the estate agent, who, it must be admitted, often performed their tasks with a degree of ease, patience, and perseverance, resulting in many inholy architectural vistas, which should render our profession envious, whilst we merely occasionally and dilatorily dealt with a matter which so closely and intimately concerns our professional welfare, concerning ourselves only with the finished articles.

At last the garden city movement was fully afloat, and although at first treated as a mere "will o' the wisp" of a few cranks and philanthropists, gradually took place as a serious attempt to solve a difficult problem, and by development of a somewhat erratic nature eventually succeeded in placing town planning on a substantial footing and impressing the philosophers of Westminster with a sense of further possibilities under Government inspiration.

The Town Planning Act at length arrived, bearing in its structure the real sources of its inspiration in Part I., under which some litigation has already transpired, and the legal construction of which has occasioned much foreboding; it confers powers to improve existing dwellings and secure new dwellings for the working classes. The provisions of this part are to be deemed part of the appropriate part of the principal Act (Act of 1909, Sec. 47).

(To be concluded.)

NEW BOOKS.

THE 1911 edition of "Spons' Architects' and Builders' Pocket Price Book" appears in a new form. The book has been divided into two sections, viz., "Memoranda and Tables" (price 2s. 6d. net) and "Prices and Diary" (price 2s. 6d. net). The diary, showing a whole week at an opening, is a new feature of the "Prices and Diary" section, and is printed on India paper. The whole has been again edited by Mr. Clyde Young, F.R.I.B.A., and Mr. Stanford M. Brooks, L.R.I.B.A., and has been subjected to thorough revision. To distinguish the two parts the "Memoranda and Tables" is bound in red, the "Prices and Diary" retains its green cover. The authors were confronted with the alternative either of omitting new matter, or of so increasing the thickness of the book as to render it unsuitable for any ordinary pocket. They cut the Gordian knot by separating the memoranda section from the prices section. The principal additions are some notes on levelling to the former; and to the latter section a chapter on the cost of lighting by acetylene and air gas, together with the diary mentioned above. In its old form "Spons' Architects' and Builders' Pocket Price Book" reached its thirty-seventh edition. This shows how useful it has always been. That usefulness is in no way diminished in its new guise.

"The Local Government Annual and Official Directory" (1s. 6d., 27A Farringdon Street, London, E.C.) makes its twenty-sixth appearance this year. No pains have been spared to obtain correct information and to bring it up to the latest date before going to press. The main portion of the book is devoted to the directory, which gives the names and addresses of the chief officials of all corporations, London borough councils, county councils, boards of guardians, urban and rural district councils, county and borough asylums, &c., throughout the kingdom. The names of the chairmen of committees in the metropolitan boroughs are given, also the chairmen of the London County Council committees. Readers will find the telephone numbers of all those London borough councils which have adopted them. In addition to the directory, there is a large quantity of useful information relating to baths and washhouses, markets, and electric light undertakings in the boroughs of London, and an abstract of the local government legislation of 1910. The charges for water,

and gas in London are shown, together with the population of the various provincial unions. There is also a complete list of all the parks and open spaces of the metropolis, with the local authorities controlling them.

Lockwoods' "Builders' Price Book" for 1911 (4s. London: Messrs. Crosby Lockwood & Son) is a portly handbook of 800 closely-printed pages. That it contains no prominent novel feature is due to the fact that the preceding annual issues covered the ground so thoroughly as to leave no corner untouched. Such variations in prices as have occurred are carefully noted, and several sections have been examined and, where necessary, revised or amplified. The 250 page supplement contains the London Building Acts 1894 to 1908 and other regulations relating to London, together with notes on important decisions in the Superior Courts. Architects, contractors, engineers and all other users who have come to rely on "Lockwood's Price Book" will welcome the new edition.

VARIETIES.

A NEW town pavilion is about to be erected by the Newquay Urban Council.

MR. DAVISON, the architect for the new Municipal buildings at Torquay, has been requested by the Town Council to advise as to the cost of enlarging the Assembly Hall.

THE Willesden Education Committee are about to purchase school sites on undeveloped areas at a cost of 1,000l. per acre.

THE east wing of Gordon College, Aberdeen, was destroyed by fire on Wednesday morning; the estimated damage is 10,000l.

A SECOND contingent of Belgian marble workers have just entered upon their duties in connection with the development of the marble industry in the Island of Skye.

THE synagogue in Great St. Helen's, Bishopsgate Street, E.C., is to be closed, and the site, which is valued at over 100,000l., is to be offered for sale.

MESSRS. HOMER & LUCAS, architects, 25 Bucklersbury, E.C., and Oxford, have prepared plans for a proposed cinematograph theatre to be erected in Fleet Road, Hampstead, N.W.

THE Bilston District Council have approved a scheme for extending the sewerage system and other work at an estimated cost of 7,800l. The work is to be carried out in the neighbourhood of Coseley Road and Mill Street.

THE Birmingham City Council on Tuesday gave authority for an expenditure of 8,750l. upon the extension of the Jewellers' School in Vittoria Street, a new lease of the site having been obtained from the Governors of King Edward's Foundation.

THE Board of Education have fined the Wood Green education authority 50l. for a violation of the code by exceeding the accommodation at three of the schools. The Wood Green authority have decided to build a new elementary school, which will relieve the existing pressure.

THE syndicate of the Swansea Chamber of Commerce, who are arranging for the erection of a coal exchange at Swansea, propose to utilise the existing site and expend from 15,000l. to 20,000l. on the building, the design of which will be open to competition.

THE Liverpool City Council, up to 31st December, had spent on demolition 427,486l. 19s. 5d., and on housing 671,004l. 2s. 7d., a total of 1,098,491l. 2s., from which has to be deducted 66,321l. 16s. 5d. derived from the sale of surplus lands, thus leaving the net expenditure 1,032,169l. 5s. 7d.

MR. AND MRS. M. E. SADLER have presented to the National Gallery, through the National Art Collections Fund, the bronze statue, entitled "Lycidas," by J. Havard Thomas. This remarkable statue has been placed in the Sculpture Hall at the National Gallery of British Art, Millbank.

COLONEL PAYN DAWNEY has informed the Easingwold Rural Council that he proposes to lay out a residential estate on a triangular piece of land immediately to the south-west of Shipton village and close to Benningbrough Station. The estate would be laid out for 200 sites for houses, and it might ultimately be increased to 300 sites.

ALTERATIONS at a cost of 7,228l. are to be carried out under the supervision of the architect, Mr. E. Seward, F.R.I.B.A., to the Cardiff Coal and Shipping Exchange. Messrs. E. Turner & Sons of Cardiff have secured the contract.

PLANS have been prepared by Mr. J. H. McGovern, architect, 26 North John Street, Liverpool, for the necessary alterations to Palace Chambers, Victoria Street, Liverpool, in providing an electric lift at an estimated cost of 500*l*. Other structural alterations have already been carried out to the building by Messrs. Jones & Son, contractors.

THE Postmaster-General of the Commonwealth of Australia invites competitive designs for a uniform postage stamp for the Commonwealth. Two premiums are offered, one of 100*l*. and one of 50*l*. Designs will be received in Melbourne up to May 31. Full particulars may be obtained from the Official Secretary, Commonwealth of Australia, 72 Victoria Street, S.W.

THE Board of Education have approved of the amended plans for Wellingborough Infants' School, which, as arranged, would accommodate 360 scholars. The following is a detailed estimate of the cost of the school:—Site, 450*l*.; school buildings, playgrounds, and fencing, 3,900*l*.; furniture, 480*l*.; architects' fees, 320*l*.; clerk of the works, 150*l*.; expenses and contingencies, 100*l*.; total, 5,400*l*.

THE Corporation of Edinburgh have arranged for holding a town planning exhibition in Edinburgh from March 13 to April 1 inclusive. The exhibition will be held in the galleries of the Royal Scottish Academy at the Mound, and in connection with the exhibition lectures on town planning and other cognate subjects will be delivered in the lecture hall of the Scottish National Portrait Gallery, Queen Street. The exhibition will be open daily from 12 noon till 5 p.m., and from 7 p.m. to 10 p.m. Admission (including lectures), 6*d*.; season tickets, 2*s*. 6*d*. each. Admission in the evenings to the exhibition and the lectures will be free.

A RECENT bulletin of the United States Department of Agriculture contains information relative to the forest resources of the world. It shows that the forests of Europe occupy an area of 750,000,000 acres, about 31 per cent. of the total land area of the Continent. The most wooded country is Finland, followed by Bosnia and Herzegovina and Sweden, the least wooded countries being Portugal and Great Britain. In the British Isles there are 3,030,000 acres of forest area.

THE Sheffield City Council received some few months ago a conditional offer from the trustees of the late Mr. W. R. Sutton to expend 50,000*l*. on the erection of artisans' dwellings in the city. The estates committee have now decided to recommend that model dwellings on the block system be erected in or about the centre of the city, in preference to the alternative cottages in the style of a garden suburb. The committee suggests certain sites belonging to the Corporation in Portland Street, Infirmary Road, and Eyre Street, and other similar sites as being suitable for the buildings.

MR. JOHN HOWARD COLLS, of 26 Park Crescent, Portland Place, W., builder, joint chairman of Messrs. George Trollope & Sons and Colls & Sons (Ltd.), of 5 Coleman Street, E.C., a director of the Builders' Accident Insurance (Ltd.), of Hobbs, Hart & Co. (Ltd.), and of the House Property and Investment Co. (Ltd.), left estate of the gross value of 419,797*l*., of which the net personalty has been sworn at 326,876*l*. Testator bequeathed 500*l*. to the Royal Institute of British Architects for educational or benevolent purposes, 300*l*. to the Builders' Benevolent Institution, and 300*l*. to the Builders' Clerks' Benevolent Institution.

THE Lord Provost's Committee of Edinburgh Town Council on Tuesday considered the offers for the work of erecting the Usher Hall, on a site at Lothian Road. It was decided by sixteen votes to two that an estimate for the whole work by one contractor should be accepted in preference to separate offers for the various departments of the work. This decision limited the available tenders to five or six, and it was thereupon agreed to recommend the acceptance of the estimate of Messrs. Neil McLeod & Sons, builders, Edinburgh, amounting to 59,916*l*.

DR. MATTHEW HAY, Medical Officer of Health for Aberdeen, in a report on tuberculosis in Aberdeen, shows that stonecutters and masons stand above all the others with a death-rate of 5.7 per 1,000 from phthisis; that is three times as high as the average (1.9) for males above 21 years. If allowance is made for the inclusion of wallers, among whom the mortality from phthisis can scarcely be higher than the average, the death-rate among persons actually engaged in the cutting and hewing of granite is probably about 6.2 per 1,000. Next to stone workers come printers and lithographers.

THE Minister for Works in New South Wales has given details of the experiment of establishing State brick works, which is to be embarked on at once. The estimated cost of

the works is 37,000*l*., and their capacity half a million bricks weekly. The Minister says that the best burnt bricks can be manufactured at well under 28*s*. per thousand, and that lime bricks at a trifle more. It is proposed to distribute the bricks by the Government tram service during the night. Boxes will be filled at the kiln, lifted by a crane on to transport trucks, and from the trucks, at the distributing centre, to drays.

THE societies affiliated to Co-partnership Tenants, Ltd. are combining to provide a technical library on behalf of the workmen in their employ. The more expensive books will be kept at a centre for the present at 6 Bloomsbury Square, W.C., and a catalogue of them supplied to each society, so that they may be forwarded by post on request. Of the cheaper manuals duplicate sets will be provided, and a set located on each estate. The library will continually be added to in order to keep it up to date. No entrance fee or other charge will be made to employees who take out books, but they will be asked to make a general collection amongst themselves once a year towards the upkeep of the library. Mr. Henry Vivian has accepted the committee's invitation to become President. Each society that makes a contribution will have the right to nominate a representative to the Library Committee. As the affiliated societies number fourteen—at Derwentwater, Ealing (London), Falings Park (Wolverhampton), Garden City (Letchworth), Hampstead (London), Harborne (Birmingham), Humblestone (Leicester), Levenshulme (Manchester), Liverpool Sealand, near Chester, Sevenoaks (Kent), Stoke-on-Trent—the library will fulfil a most useful and extensive educational purpose.

ACCORDING to Mr. John P. Bray, the United States Consul-General at Sydney, a record volume of business in the building and kindred industries stands to the credit of the State of New South Wales for the year 1910, with every promise of a still higher mark during the twelve months to come. The great difficulty looming largely, however, is the shortage of ground space, and the only way to overcome it will be to erect "skyscrapers" after the style in America. An architect prominent in the city declares that such a trend of events was inevitable, and that he was studying as much as he could the art of building these huge edifices. He demonstrated his remarks with the declaration that a building was shortly to be erected which would be twelve storeys high. Two or three other buildings proposed to be erected within the next few months will be of similar altitude. Another reason advanced for the erection of high buildings was the Federal land tax, owners of property being compelled to build "into the air" in order to gain profits.

TRADE NOTES.

MESSRS. E. H. SHORLAND & BROTHER, Ltd., of Failsworth, Manchester, have had in hand the following contracts:—The Galway New Fever Hospital is being supplied with patent Manchester stoves with descending smoke flues, patent exhaust roof and special inlet ventilators; the New Temperance Memorial Hall, Newcastle-on-Tyne, is being ventilated by means of Shorland's exhaust roof ventilators and inlet ventilating panels; the Electric Theatre, Folkestone, is being supplied with their exhaust roof ventilators, and the Isolation Hospital, Stanhope, is being supplied with Shorland's warm air ventilating Manchester grates, exhaust roof ventilators and special inlet ventilators.

THE Carron Company, having lately acquired the business of Messrs. Longden & Co., Phoenix Foundry, Sheffield, and 3 Berners Street, London, have appointed Mr. A. Harold Smith as Art Director for their combined businesses. Mr. Smith will be glad to wait upon clients at any time, by appointment, which may be made at No. 3 Berners Street, W., for the purpose of submitting drawings of fireplaces from original models of eighteenth century and other periods, and also of fireplaces built on scientific principles.

MESSRS. THOS. PARSONS & SONS, 8 Endell Street, Long Acre, W.C., have issued a very ingenious patent showcard for the purpose of indicating the effect of their motor colours. Six cardboard panels bearing different colours can be placed at the back of a partly-transparent sheet, in the centre of which is outlined a motor-car. The colour shows through on the paintable parts of the card only, and gives a perfect idea of its appearance if that particular tint were employed. Messrs. Parsons are particularly suited to produce the best motor colours, for when their business was established over a century ago their reputation for carriage paints was second to none.

THE

Architect and Contract Reporter.

FRIDAY, MARCH 17, 1911.

Published weekly, subscription 19s. per annum for Great Britain, and for Colonial and Foreign subscriptions £1 6s. 6d. All business communications to the Managing Director,

P. A. GILBERT WOOD,

Publishing Offices, 6-11 Imperial Buildings, Ludgate Circus, London, England.

Telephone No. 4725 Holborn.

Branch Offices at 43 OLD QUEEN STREET, S.W., Messrs. W. HAY FIELDING & CO. being the representatives for all business purposes.

The Birmingham Offices are at 102 COLMORE ROW.

Entered in the United States of America as second-class matter.

AGENTS FOR AMERICA:

The International News Co., 5 Bream's Buildings, Chancery Lane, London, England, and New York.

AGENTS FOR CANADA:

Messrs. WM. DAWSON & SONS, Ltd., 91 Church Street, Toronto, to whom all correspondence for Subscription and Advertising Rates should be made.

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NOTICE TO ADVERTISERS.

Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

Special Position Spaces.—Unless ordered for weekly insertions the Proprietors cannot guarantee particular dates.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit the insertion of lengthy communications.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

As great disappointment is frequently expressed at the nonappearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

ARGENTINE.—April 20.—A competition of plans for a hospital and school of medicine, to be erected at Rosario in celebration of the Argentine Centenary at a cost of about 149,000*l*. Prizes of 1,050*l*., 700*l*. and 440*l*. will be awarded. A copy of the conditions, &c., may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, London, E.C., where also a limited number of copies are available for distribution. Plans must be sent to the "Secretaria de la Comisión Pro-Hospital é Instituto de Enseñanza Médica del Centenario, Calle Córdoba 1230," Rosario.

ATHENS.—Aug. 21.—An international competition of plans is invited by the Greek Ministry of the Interior (Public Works) for the erection of a Court of Justice at Athens. The cost of the building must not exceed 160,000*l*. A first prize of 800*l*., and a second prize of 320*l*. will be awarded. The Greek *Official Gazette*, containing particulars (in Greek and in French) may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade 73 Basinghall Street, E.C.

BRADFORD.—May 1.—The Board of Management of the Bradford Infirmary invite plans with estimates for a new infirmary in Duckworth Lane. Mr. Keith D. Young, F.R.I.B.A., will act as assessor. Deposit 3*l*. 3*s*., which will be refunded on receipt of a bona-fide design or if block plan, instructions, &c., are returned within a month after receipt of replies to competitors' questions. The Secretary Superintendent of the Royal Infirmary, Bradford. (For further particulars see advertisement, January 13.)

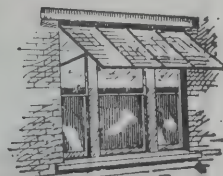
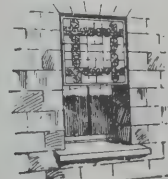
CHESTERFIELD.—May 15.—The Standing Joint Committee for Derbyshire invite architects practising in the county to submit designs for a Court-house and lock-up to cost 8,000*l*. Mr. F. Baggallay, F.R.I.B.A., will act as assessor. Deposit 3*l*. 3*s*. Apply to Mr. G. C. Copstick, L.R.I.B.A., County Offices, Derby.

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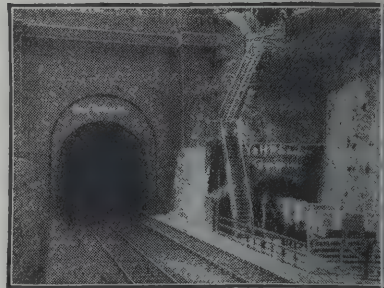
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COVENTRY.—April 1.—The Corporation contemplate the erection of municipal offices in the centre of the city, and also possibly a town hall, and accordingly invite competitive designs. Mr. E. Guy Dawber, F.R.I.B.A., will act as assessor. Deposit 2l. 2s., which will be refunded on receipt of a bona-fide design or if the particulars are returned within fourteen days of receipt. Mr. Geo. Sutton, town clerk, 10 Hay Lane, Coventry. (For further particulars see advertisement, November 18.)

CUBA.—April 15.—An international competition has been arranged for a Presidential Palace to be erected at Havana at a cost of about 205,000l. Premiums of 10,000 pesos and 5,000 pesos will be awarded. Conditions may be seen at the Cuban Legation, 3 Grosvenor Mansions, Victoria Street, S.W., or the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

LOWESTOFT.—The Education Committee invite architects practising or residing in Norfolk and Suffolk to submit designs for an elementary school. Premiums of twenty, ten, and five guineas. Particulars may be had on payment of 5s. from Mr. R. Beattie Nicholson, town clerk, Town Hall, Lowestoft. For further particulars see advertisement, Feb. 10.

MANCHESTER.—March 31.—The Corporation invite designs for a Library and Art Gallery upon the Piccadilly site in the centre of the city. The Preliminary Competition closes March 31. The authors of ten selected designs will compete in the Final Competition. Mr. Reginald Blomfield, A.R.A., will act as assessor, in connection with the city architect. Apply for particulars to Mr. Thomas Hudson, Town Clerk, Town Hall, Manchester. (For further particulars see advertisement, January 6.)

ROMFORD.—The Town Planning and Modern House and Cottage Exhibition at Gidea Park, Squirrels Heath, in the Romford Garden Suburb, summer 1911. Class IV.—Town plan of Gidea Park—prizes of 100l. and 50l. Class VII.—Open to builders. For excellence of workmanship and construction in the erection of a cottage in Class I. or II.—first prize, gold medal and 100l.; second prize, 50l. Final dates for designs; Class IV., March 31, 1911. Mr. Michael Bunney, A.R.I.B.A., hon secretary, 33 Henrietta Street, Strand, W.C.

SOUTHAMPTON.—The Council of Hartley University College invite designs for the proposed new buildings. Mr. H. T. Hare, F.R.I.B.A., will act as assessor. The deposit of 1l. 1s. with the application will be returned if the conditions are returned within fourteen days. Mr. D. Kiddle, registrar, Hartley University College, Southampton.

WALES.—May 5.—The Corporation of Swansea invite architects to submit designs and estimates for the Castle Street improvement. Deposit 1l. 1s., which will be refunded on receipt of a bona-fide design or if block plan and particulars are returned within a fortnight after receipt. The architect appointed to prepare the working drawings will be paid not more than 250l., and a premium of 50l. will be paid for the second design. Mr. S. S. Reay, F.R.I.B.A., will act as assessor. Apply to the Town Clerk, Guildhall, Swansea.

CONTRACTS OPEN.

BACUP.—March 20.—For erection of a brick urinal in Todmorden Road. Mr. W. H. Elce, A.M.I.C.E., borough engineer, Municipal Offices, Bacup.

BARMING HEATH.—April 1.—For proposed iron staircase and glass shelter at the Kent County Lunatic Asylum. Deposit 10s. 6d. The Engineer and Clerk of Works of the Asylum, Barming Heath, nr. Maidstone.

BARMING HEATH.—April 1.—For proposed internal alterations to 4 and 5 wards (male and female) at the Kent County Lunatic Asylum. Deposit 5s. The Engineer and Clerk of Works of the Asylum, Barming Heath, nr. Maidstone.

BARROW-IN-FURNESS.—March 20.—For erection of proposed urinals at rear of the Cross Keys Hotel, William Street. Deposit 1l. 1s. The Borough Engineer's Office, Town Hall.

BARROW-IN-FURNESS.—March 28.—For erection of proposed fire station in Abbey Road. Deposit 1l. 1s. The Borough Engineer's Office, Town Hall.

BATLEY.—March 20.—For the various works in erection of four villa residences at Healey Lane. Mr. B. Watson, architect and surveyor, Upper Taylor Street, Batley.

BEN RHYDDING.—March 21.—For the various works in erection of a motor garage and appurtenances, also new entrance drive, &c., at Wheatley Lawn, Ben Rhydding, near

Ilkley. Forward names by March 21 to Messrs. C. Williams & Sons, architects, Post Office Buildings, Commercial Street, Halifax.

BIRMINGHAM.—March 31.—For the erection of an extension to the Vittoria Street school for jewellers and silversmiths. Send names and 2l. deposit by March 17 (5 p.m.) to Mr. A. H. Leaney, secretary, School of Art, Margaret Street, Birmingham.

BRADFORD.—March 21.—For all trades required in the erection of boiler-house, engine-house, and chimney, at Dumb Mill, Frizinghall. The City Architect, Town Hall, Bradford.

BURLEY-IN-WHARFEDALE.—For the several works required in additions and alterations to High Lands. Forward names to Messrs. Empsall & Clarkson, architects, 7 Exchange, Bradford, and West Bar Chambers, Leeds.

BURNLEY.—March 20.—For the adaptation of existing buildings and the construction of new buildings on the site of the Old Barracks, situated at Barrack Road, for the accommodation of the 6th Lancashire Battery 1st East Lancashire Brigade R.F.A., and "C" Section No. 2 Field Ambulance. Deposit 1l. 1s. Mr. W. Greenwood, A.R.I.B.A., architect and surveyor, Victoria Chambers, Victoria Street, Blackburn.

CARLISLE.—March 25.—For erection of a new stone bridge of 9 feet span over the Crossings Burn, near Mallgate. Mr. J. Murray, surveyor, Kirkclinton, Carlisle.

CHATHAM.—April 7.—For erection of a County school to accommodate 200 girls at Chatham Hill. Send names and 2l. deposit by March 22 to Mr. Fras. W. Cook, secretary, Caxton House, Westminster, S.W.

CHADDERTON.—April 6.—For the following works in the construction of the recreation ground:—(1) Supply and erection of about 1,100 yards of unclimbable wrought-iron railing, together with entrance gates; (2) draining, levelling, turfing, planting, and path-making; (3) erection of conveniences, shelters, pavilion, and caretaker's house. Deposit 1l. 1s. The Surveyor's Office, Town Hall, Chadderton, Lancs.

DEAL.—April 10.—For alterations to the engineer's house at the waterworks, consisting of the construction of two bay windows and certain small repairs. The Engineer, the Waterworks, Deal.

DEVIZES.—March 25.—For erection of nurses' bath-rooms, water closets, &c., at the workhouse. Mr. O. Sheppard, clerk, Union Offices, Devizes.

DEWSBURY.—March 23.—For the works required in the extension of the convent at Westtown. Messrs. Holtom & Fox, architects, Corporation Street, Dewsbury.

DIPTON.—March 20.—For the several works required in erection and completion of nine houses, for the South Medomsley Colliery Co. Mr. G. T. Wilson, architect, 22 Durham Road, Blackhill.

EASTBOURNE.—March 18.—For additions to Old Town Baths, and to Acacia Villa, Seaside. Mr. W. Chapman Field, borough architect and building surveyor, Town Hall, Eastbourne.

EASTLEIGH.—March 27.—For ventilating fittings and two folding partitions to be provided and fixed at the Eastleigh Cranbury Road girls' Council school, Hants. Deposit 10s. Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

ERDINGTON.—March 29.—For the erection of lavatories for both sexes and a pavilion shelter at Short Heath Park. Deposit 2l. 2s. Mr. H. H. Humphries, engineer, Council House, The Park, Erdington.

GOLCAR.—March 23.—For the various works required in erection of six dwelling-houses, Handel Street, Golcar, Yorks. Messrs. Lunn & Kaye, architects and surveyors, Milnsbridge and Huddersfield.

GOLCAR.—March 23.—For the various trades required in erection of dwelling-houses in Leymoor Road. Mr. A. Shaw, architect, Golcar, Yorks.

HALIFAX.—March 20.—For the execution of the mason's, carpenter's, and slater's work required in erection of a barn, mistal, stable, and cart-shed, at Mixenden Green. Deposit 1l. Mr. R. J. Hartley, C.E., waterworks engineer, Gibbet Street, Halifax.

HALIFAX.—March 20.—For the removal and rebuilding of the mortuary and disinfecter house at the Hospitals, Stoney Royd. Deposit 5l. Mr. J. Lord, M.I.C.E., borough engineer, Town Hall, Halifax.

HASGUARD.—March 26.—For building a house, &c., at Bushford, Hasguard, Milford Haven. Mr. Edwards, 7 Priory Street, Milford Haven.

HULL.—March 24.—For plumbers' and ironfounders' work, and for heating and electric lighting work in con-

nection with certain premises on the Hesse Road. Mr. T. Beecroft Atkinson, architect, 11 Trinity House Lane, Hull.

HULL.—March 29.—For the steel roof work required in the extensions to the Electricity Works. The work consists of 48 trusses of spans varying from 12 feet 6 inches to 65 feet, together with rolled joists and other steel work, amounting altogether to about 80 tons. Deposit 1*l.* Mr. A. E. White, M.I.C.E., city engineer, Town Hall, Hull.

IMMINGHAM.—March 18.—For the construction of a police station and a pair of cottages at Immingham, Lincs., for the Lindsey County Council. Send names by March 18 to Mr. James Thropp, county surveyor, 29 Broadgate, Lincoln.

IRELAND.—March 27.—For the erection of new premises at Cavan for the Ulster Bank, Ltd. Deposit 2*l.* 2*s.* Messrs. Blackwood & Jury, M.S.R.I.A.I., architects, 41 Donegall Place, Belfast.

KEIGHLEY.—March 20.—For the various works required in erection of additions to Park Works. Send names by March 20 to Messrs. J. Haggas & Sons, architects, North Street, Keighley.

KEIGHLEY.—March 21.—For the various works to be done in the enlargement of St. Anne's Schools. Messrs. E. Simpson & Son, 12 Cunliffe Terrace, Manningham.

KING'S LYNN.—March 22.—For alterations to house in Cattle Market, for the Corporation. Mr. A. J. Smith, borough surveyor, Town Hall, King's Lynn.

LANGCLIFFE (YORKS).—For the construction of a new roof for the Langcliffe Council School (joiner, slater, and plasterer). Mr. Chas. A. Milford, Education Offices, Settle.

LEEDS.—March 22.—For alterations to offices in the Municipal Buildings. Mr. W. T. Lancashire, city engineer, Municipal Buildings, Leeds.

LEEDS.—March 29.—For erection of two hostels for women students at the Training College, Beckett's Park, Headingley. Mr. A. E. Kirk, architect, Albion Street, Leeds. Send names and 2*l.* 2*s.* deposit at once to Mr. James Graham, Secretary for Education, Education Department, Calverley Street, Leeds.

LONDON.—March 23.—For the work of lathing and slating a roof at the Lambeth Council's depot, Fenwick Place, Landor Road, Stockwell, S.W. Deposit 1*l.* 1*s.* Mr. H. Edwards, C.E., borough engineer, Landor Road, Brixton Hill, S.W.

LONDON.—March 23.—For the provision of fire-escape staircases at the St. John's Hill Infirmary, Wandsworth, S.W. Mr. F. W. Piper, clerk, Union Offices, St. John's Hill, Wandsworth, S.W.

LONDON.—March 30.—For general repairs and painting at the Plashet Schools, Upton Park, E. Mr. W. T. W. Aldwinckle, F.R.I.B.A., 20 Denman Street, London Bridge, E.

LONDON.—April 3.—For alterations and additions to existing drill-hall premises, St. George's Road, Wimbledon, for the Territorial Force Association of the County of Surrey. Messrs. Jarvis & Richards, architects to the Association, 10 Queen Anne's Gate, Westminster, S.W. Send names and 1*l.* 1*s.* deposit by March 22 to Messrs. Robinson & Roods, quantity surveyors, 8 New Court, Carey Street, Lincoln's Inn, W.C.

LONDON.—April 3.—For building new drill hall premises, Mitcham Road, Croydon, for the Territorial Force Association of the County of Surrey. Messrs. Jarvis & Richards, architects to the Association, 10, Queen Anne's Gate, Westminster, S.W. Send names and 1*l.* 1*s.* deposit by March 22 to Messrs. Robinson & Roods, quantity surveyors, 8 New Court, Carey Street, Lincoln's Inn, W.C.

MANCHESTER.—March 22.—For erection of corrugated iron buildings at Abbey Hey Lane, Gorton. Deposit 1*l.* 1*s.* The Education Offices, Deansgate, Manchester.

MARSDEN (YORKS).—March 27.—For the erection of 53 dwelling-houses and construction of new streets at Smithy Holme, Marsden, for the Marsden Equitable Industrial Society, Ltd., Yorks. Mr. J. Berry, architect and surveyor, 3 Market Place, Huddersfield.

MIDDLESBROUGH.—March 20.—For erection and completion of assembly hall and Sunday schools, Cemetery Road, in connection with the church of St. Barnabas. Deposit 1*l.* 1*s.* Mr. J. Forbes, architect, 43 Albert Road, Middlesbrough.

MILBORNE.—March 20.—For erection of a Council School at Milborne Port, Somerset. The Committee Room, Victoria Hall, Milborne Port, or Mr. A. J. Picton, Bruton.

MILFORD HAVEN.—March 31.—For erection of a residence at Murray Crescent. Mr. J. B. Gaskell, architect and surveyor, Milford Haven.

NEWCASTLE-UPON-TYNE.—March 27.—For widening on the north side in masonry and rebuilding spandrels on south side of Dilston Bridge, between Corbridge and Hexham, by the Northumberland County Council. The County Surveyor's Office, the Moothall, Newcastle-on-Tyne.

PLYMOUTH.—March 20.—For alterations and additions to the laundry at the workhouse. Send names by March 20 to Messrs. Thornely, Rooke & Barrons, architects, 11 T. Crescent, Plymouth.

ROBERTTOWN.—March 20.—For additions and alterations to property at Roberttown, Dewsbury. Send names by March 20 to Mr. E. Vincent King, A.R.I.B.A., architect, Westgate, Dewsbury.

SANDBACH.—March 31.—For erection of an upper standards Council school. Deposit 1*l.* 1*s.* Messrs. Alfred Price & Son, architects, Sandbach.

SCOTLAND.—March 23.—For the mason, carpenter, slater, plumber, and painter works of the following, for the Fife Estates (Elgin District), viz:—Additions to Steading, Wester Coxton; additions to Steading, Angus Houses; building stable, Burnside, Tiendland; covering cattle fold, Easter Kintrae; and additions to Steading, Mid Kintrae. Mr. John Wittet, architect, Elgin.

SCOTLAND.—April 3.—For goods shed, offices, and relative works, on the site of the existing Aberdeen Goods Station for the Caledonian Railway Co. Deposit 2*l.* 2*s.* The Company's engineer, Buchanan Street Station, Glasgow.

SCOTLAND.—April 7.—For the several works required in erection of new buildings at Taymount Terrace and Wester Avenue, Perth, for the directors of the City and County of Perth Infirmary. The works for which tenders are invited consist of:—Excavator, mason and brickwork, carpenter and joiner work, slater work, plumber work, plaster and concrete work, cement and harling work, tile layer work, iron and steel work, and glazier work. Deposit 2*l.* 2*s.* Mr. James Miller, A.R.S.A., F.R.I.B.A., architect, 15 Blythswood Square, Glasgow.

SEAHAM HARBOUR.—March 24.—For the erection of a picture theatre. Messrs. W. & T. R. Milburn, F.R.I.B.A., architects, 3 Park Terrace, Sunderland.

SELBY.—March 20.—The West Riding Standing Joint Committee invite whole or separate tenders for works in alterations and additions to Selby Police Station, viz., builder, joiner, slater, plumber, plasterer, painter, asphalt. Send 1*l.* deposit to the West Riding Treasurer, County Hall, Wakefield. Mr. J. Vickers Edwards, West Riding Architect, County Hall, Wakefield.

SOUTHMOLTON.—March 22.—For building a drill hall, with officers' quarters, in reinforced concrete at Southmolton, Devon, for the Territorial Force Association. Deposit 2*l.* 2*s.* Mr. S. Edwards, P.A.S.I., architect and quantity surveyor, Barnstaple.

SOUTHOWRAM (YORKS).—March 23.—The West Riding Education Committee invite whole or separate tenders for alterations to Southowram, Brookfoot Council school (builder, joiner, slater, plumber, plasterer, and painter). The Education Architect, County Hall, Wakefield. Send 1*l.* to the West Riding Treasurer, County Hall, Wakefield.

STEETON.—March 20.—For erection and completion of a block of three shops and dwelling-houses at Steeton, Yorks. Mr. G. L. Clarke, architect and surveyor, Arcade Chambers, North Street, Keighley.

STRATFORD-UPON-AVON.—March 18.—For proposed Primitive Methodist Church, Clifford Chambers. Send names on or before March 18 to Messrs. Knight & Hebery, architects, 5 Rother Street, Stratford-on-Avon.

STROUD.—April 18.—For the provision and erection of a refuse destructor and other works connected therewith. Deposit 1*l.* 1*s.* Mr. G. P. Milnes, A.M.I.C.E., engineer, Stroud.

SWINDON.—April 4.—For the enlargement of Swindon Head Post Office. The Postmaster, Swindon, and H.M. Office of Works, Storey's Gate, London, S.W.

SWINTON.—March 22.—For erection of a fireproof staircase at the girls' dormitories at their schools at Swinton, near Manchester, for the Manchester Board of Guardians. Deposit 10*s.* 6*d.* Mr. A. J. Murgatroyd, architect, 23 Strutt Street, Manchester.

SYCHTYN.—March 21.—For the erection of a shop and warehouse for the Co-operative Society, Ltd. Mr. W. E. Chambers, secretary, Violet Cottage, Sychtyn, near Northop.

TIDWORTH.—April 3.—For the erection of a riding school, Assaye Barracks, Tidworth, Hants. Send names and 10s. deposit by March 24 to the Director of Barrack Construction, 10 Pall Mall, London, S.W. (See advertisement.)

TRURO.—April 3.—For erection of 17 artisans' dwellings on land at Waterloo. Mr. F. A. Barnes, A.M.I.C.E., city engineer and surveyor, Municipal Buildings, Truro.

WAKEFIELD.—March 23.—For erection of partition at Prierley Grimethorpe County school, for the West Riding Education Committee. The Education Architect, County Hall, Wakefield.

WALES.—For erection of a small house at St. Fagan's, Cardiff. Send names and 1l. 1s. deposit to Mr. I. P. Jones, A.R.I.B.A., architect and surveyor, 18 St. Mary Street, Cardiff.

WALES.—For erection of a small house at Peterstone-super-Ely. Deposit 1l. 1s. Mr. I. P. Jones, A.R.I.B.A., architect and surveyor, 18 St. Mary Street, Cardiff.

WALES.—For erection of an electric picture palace at Abertillery, Mon. Send names and 2l. 2s. deposit to Mr. H. Douglas Blessley, architect, 3 Edward Terrace, Cardiff.

WALES.—March 22.—For erection of five cottages on the Llanover Road, Blaenavon. Mr. D. Cotterell, King Street, Blaenavon, Mon.

WALES.—March 23.—For building a dwelling-house and appurtenances, Lower High Street, Merthyr. Mr. C. M. Davies, M.S.A., 112 High Street, Merthyr Tydfil.

WALES.—March 25.—For erection of house at Penydarren. Mr. D. Thomas, Pantybryn, Gellifaelog Road, Penydarren.

WALES.—March 29.—For erection of twelve or more semi-detached houses in Merthyr-mawr Road, Bridgend, for the Glangwyr Building Club. Mr. O. P. Bevan, architect and surveyor, 26 Park Street, Bridgend, and Express Chambers, Merthyr Tydfil.

WALES.—March 31.—For new schools at Gellifaelog for 1,150 children, for the Merthyr Tydfil Education Committee, viz.: (1) Infants' school for 450 children, (2) boys' school for 350 children, (3) girls' school for 350 children, (4) manual instruction and combined domestic science block, (5) playground, drainage, &c. Deposit 5l. 5s. Mr. J. Ll. Smith, M.S.A., architect, Aberdare.

WALES.—March 31.—For erection of a covered play shed at the West Monmouthshire school, Pontypool, and also for removal and re-erection of the existing cycle house. Messrs. Fisher & Sons, architects, Albion Chambers, Pontypool.

WALES.—April 4.—For erection of an infants' school at Mount Pleasant, Merthyr Vale. Deposit 2l. 2s. The Deputy Surveyor, Town Hall.

WALES.—April 6.—For erection of addition of two classrooms (100 places), new cloak-room, &c., at Cynlais Council school, Ystradgynlais, Brecon. Mr. C. W. Best, surveyor to the committee, County Hall, Brecon.

WEST HARTLEPOOL.—March 29.—For erection of secondary school for girls in Eldon Grove. Deposit 2l. 2s. Mr. N. F. Dennis, M.I.C.E., borough engineer and surveyor, West Hartlepool.

WOKING.—March 28.—For alterations to Woking Head Post Office. The Woking Head Post Office and H.M. Office of Works, Storey's Gate, London, S.W.

WINSFORD.—March 20.—For supply and erection of cattle sheds, pens, sale ring, fencing, and offices and paving, &c., required in the construction of cattle auction. Mr. James Wilkinson, surveyor to the Council, Market Place, Winsford, Cheshire.

TENDERS.

COBRIDGE.

For additions to the Home of the Little Sisters of the Poor. Messrs. SCRIVENER & SONS, architects, &c., Hanley.

Cooke	£7,145	0	0
Robinson & Cope	7,120	0	0
Cornes & Son	6,900	0	0
Hopkins	6,899	0	0
J. GRANT, Stoke-on-Trent (accepted)	6,688	0	0
Broadhurst	6,650	0	0
Godwin	6,648	0	0
Ellis	6,630	0	0
Sambrook	6,610	0	0
Tompkinson & Bettelley	6,493	0	0
S. Wilton, jun.	6,458	0	0
Thomas & Son	6,445	0	0
Wardle	6,440	0	0
Heath	6,172	0	0

BIRMINGHAM.

For erecting a park shelter in Calteridge Park, for King's Norton and Northfield Urban District Council. Mr. AMBROSE W. CROSS, engineer and surveyor.

Bowden	£530	3	3
Harris & Son	490	0	0
Dorset	403	5	0
Jamieson & Gossage	398	12	2
Halward & Son	343	0	0
Pearce & Son	328	14	0
Ingram & Son	317	14	0
J. DAWSON, King's Heath (accepted)	315	5	0

CORNWALL.

For erection of two farmhouses and two sets of farm buildings at Lydcott Farm, Morval, St. Germans, for the Small Holdings Committee of the Cornwall County Council.

Rothery	£1,910	0	0
Laundry	1,410	0	0
Searle	1,403	4	0
Trehane & Son	1,370	0	0
Daw	1,328	7	6
Symons	1,328	1	5
Taylor	1,295	0	0
SYMONS, Liskeard (accepted)	1,267	0	0

FYFIELD.

For alterations and additions to the Industrial and Truants' School, Fyfield, near Ongar, Essex. Messrs. WILLIAM & JOHN H. JACQUES, architects, 2 Fen Court, Fenchurch Street, E.C.

Brand, Pettitt & Co.	£2,763	0	0
Webb	2,349	0	0
Battley Sons & Holness	2,327	0	0
Paul	2,291	0	0
Lowe & Co.	2,285	0	0
Lawrence & Son	2,274	0	0
Fitch & Cox	2,181	0	0
J. & M. Patrick	2,144	0	0
Woollaston & Co.	2,130	0	0
Symes	2,116	0	0
Horswill	1,969	0	0
Clark & Sons	1,953	0	0
COXHEAD, Leytonstone (accepted)	1,949	0	0

LONDON.

For the supply and delivery of a quantity of steam-piping required for the new engine-house at the Abbey Mills pumping station, for the L.C.C.

The East Ferry Road Engineering Works Company	£230	0	0
Hunter & English	209	0	0
Seagers	195	0	0
Flavell & Churchill	175	0	0
John Cochrane, Barrhead, near Glasgow (recommended)	165	0	0

For the erection of a gymnasium and an art room at the L.C.C. Residential and Day Training College, Avery Hill, Woolwich, and the formation of a pathway from the main building to the lecture rooms.

Nightingale	£2,299	19	3
Newell & Lusty	2,116	19	3
Pollock	2,090	0	0
Proctor & Sons	2,059	8	6
F. & T. Thorne	2,049	0	0
Kirk & Randall	2,048	0	0
Lawrance & Sons	2,016	0	0
J. & M. Patrick	2,013	0	0
Smith & Sons	1,974	0	0
J. & C. Bowyer	1,965	0	0
Lowe & Co.	1,963	0	0
Lole & Co.	1,925	0	0
Roberts & Co.	1,908	0	0
Gathercole Bros.	1,783	15	0
Webster & Son	1,778	18	7
Cook & Sons, Crawley (recommended)	1,736	17	6
Architect's estimate	2,118	0	0

For alterations at Nos. 66, 68 and 70 Broadway, Stratford, E., for Boardmans. Messrs. G. BAINES & SON, architects, 5 Clement's Inn, W.C.

BATTLE, SONS & HOLNESS, 21 Old Kent Road, S.E. (accepted)	£437	10	0
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GENERAL POST OFFICE, LONDON—ENQUIRY OFFICE.



GENERAL POST OFFICE, LONDON.—DETAIL OF WINDOW. PUBLIC OFFICE



GENERAL POST OFFICE, LONDON.—LETTER SORTING OFFICE



GENERAL POST OFFICE LONDON.—LOADING YARD, LOOKING SOUTH-EAST.

LONDON—continued.

For the building of a new lecture hall, with better accommodation for the library, at the Horniman Museum.

Higgs & Hill	£5,935	0	0
Holloway Bros., London	5,870	0	0
F. & H. F. Higgs	5,840	0	0
Lawrance & Sons	5,688	0	0
Johnson & Co.	5,638	0	0
H. L. Holloway	5,600	0	0
J. & C. Bowyer	5,425	0	0
Downs	5,260	0	0
Gathercole Bros., High Road, Norbury	5,130	0	0

Amended tenders.

H. L. Holloway	5,056	16	5
J. & C. Bowyer	4,714	3	6
Downs	4,690	0	0
Gathercole Bros.	4,614	4	0

Further amended tender.

Gathercole Bros. (recommended)	4,889	13	0
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For the structural improvement of the Morden Terrace School, Greenwich, London, for the L.C.C. The additional accommodation on completion of the improvements will be twenty-four boys, twenty-four girls, and seven infants.

Appleby & Son	£17,464	0	0
McLaughlin & Harvey	17,002	8	2
Downs	16,114	0	0
Garrett & Son	15,927	0	0
Kirk & Randall	15,926	0	0
Wallis & Sons	15,635	0	0
J. & M. Patrick	15,628	0	0
Akers & Co.	15,593	0	0
Holloway	15,564	0	0
Lawrance & Sons	15,551	0	0
Patman & Fotheringham	14,923	0	0
J. & C. Bowyer	14,670	0	0
Leng	14,666	0	0
Gathercole Bros., London Road, Norbury (recommended)	14,309	0	0
Architect's estimate	15,249	0	0

Alternative estimates.

For new walls in lime mortar in place of cement mortar—saving.

Wallis & Sons	£170	0	0
Gathercole Bros.	148	0	0
Kirk & Randall	138	0	0
Holloway	127	0	0
J. & M. Patrick	124	0	0
J. & C. Bowyer	123	0	0
McLaughlin & Harvey	113	9	0
Patman & Fotheringham	90	0	0
Garrett & Son	83	0	0
Appleby & Son	74	0	0
Leng	66	0	0
Lawrance & Sons	56	0	0
Akers & Co.	41	0	0

For new fire-resisting floors in old rooms in place of joisted timber floors—extra.

Appleby & Son	£387	0	0
Holloway	358	0	0
Wallis & Sons	328	0	0
Akers & Co.	322	0	0
Leng	306	0	0
Kirk & Randall	302	0	0
Patman & Fotheringham	300	0	0
J. & C. Bowyer	289	0	0
Garrett & Son	288	0	0
McLaughlin & Harvey	281	7	5
J. & M. Patrick	276	0	0
Gathercole Bros.	268	0	0
Lawrance & Sons	245	0	0

The Education Committee propose that the alternative estimate of 268*l.* for providing new fire-resisting floors in the old rooms shall be accepted, but they do not consider that the alternative provision of walls in lime mortar should be approved. The builders' tender will, therefore be increased to 14,577*l.*

LONDON—continued.

For the erection of a further instalment of eighty-five cottages on the Tower Gardens section of the L.C.C. White Hart Lane estate, Tottenham, on the fourth part of the section. The proposed cottages comprise one of five rooms, forty-eight of four rooms, and thirty-six of three rooms, each cottage in addition containing a scullery and the usual offices.

Roberts & Co.	£20,128	0	0
Downs	18,197	0	0
Coxhead	17,900	0	0
Lawrence & Son	17,278	0	0
Nicholls & Son	16,543	0	0
Rowley Bros.	16,510	0	0
A. Monk, Lower Edmonton (recommended)	16,160	0	0
Architect's estimate	17,678	0	0

WALES.

For works in connection with the Ely Valley sewerage scheme, for the Llantrisant and Llantwit Fardre Rural District Council. Mr. GOMER S. MORGAN, engineer, Pontypridd, Wales.

Jordan & Sons	£21,059	7	8
Strachan	20,264	8	10
Price & Co.	19,889	17	3
Underwood & Bros.	19,725	13	4
Barnes, Chaplin & Co.	19,299	11	0
Buckley	19,231	1	0
Collins & Co.	19,091	5	3
John & West	18,992	19	1
Smith	18,965	0	0
Jones	18,937	9	4
Johnson Bros.	18,694	19	5
J. DICKSON, St. Albans (accepted)	18,296	13	4

STONE v. PLASTER.

At a meeting of the City Council of the Corporation of Bath held last week, it was decided to erect at the approaching Festival of the Empire, to be held at the Crystal Palace, as an exhibit for the city of Bath, a replica of the entrance portico of the Temple of Minerva, which it is believed in ancient times stood on the site of the present Pump-room. The height of the front will be 24 feet, with four fluted columns, surmounted with Corinthian caps and a carved tympanum.

Estimates were obtained for erecting it in Bath stone and also in plaster, and it was found that it could be carried out by the Bath Stone Firms in St. Aldhelm Box Ground stone at a price below that of plaster. It is rare for stone to beat plaster in fair competition, and the result speaks well for Bath stone. On the obvious great artistic gain by the use of the latter in connection with the replica of a Classic temple there is no need to insist. It will be extremely interesting to compare this temple front in the best stone with the usual lath and plaster shams which have hitherto passed muster in temporary exhibitions. The stone, it may be mentioned in conclusion, will be taken from the quarries which were worked by the Saxons.

THE Devonport Borough Council have appointed a committee to consider the question of erecting new municipal buildings.

MR. CHARLES BERRINGTON, builder and contractor, of Waterloo Road, Bedford, and Wavertree, Liverpool, left estate of the gross value of 331,935*l.*

APPLICATIONS are invited immediately for the office of Diocesan Surveyor for the Diocese of Bath and Wells in place of the late Mr. A. B. Cottam. The appointment will be made on Tuesday next, the 21st inst.

THE Lincoln Education Committee on Tuesday decided to enlarge Monks Road Council School at a total cost of 3,025*l.*

MEMBERS and licentiates of the Royal Institute of British Architects are requested by order of the Council not to take part in the competition for new school buildings, Wallsend.

THE Chartered Surveyors' Golfing Society will hold a tournament between 25 March and 31 July. The winner will hold the challenge cup presented by the Council of the Surveyors' Institution for one year, and also receive a memento from the President, Mr. Leslie R. Vigers. Entries are to be sent to Mr. Sydney A. Smith, 22 Chancery Lane, by 20 March. All members of the Surveyors' Institution are eligible to join the Society.

THE TOWN PLANNING AGITATION.

(Continued from last week.)

PART II. deals with the subject of this paper, and Part IV. may be deemed supplementary thereto, containing as it does protective clauses for commons, open spaces, land near Royal Palaces and parks. Part III., which indicates the inspiring sources of the Act, requires County Councils to appoint medical officers and to establish County Public Health and Housing Committees, and empowers them to assist building societies. Roughly, this is a general description of the Act, which had been in force twelve months before the Town Planning Conference, that vast mosaic of opinions practical, chimerical, Utopian, and trivial was spread before the bewildered eyes of a dull and ineffectual public; which, in its newspaper utterances, responded vaguely, and with that final uncertainty which bade fair to gather up town planning with all the other banalities that a respectable public finds pleasure to admit and treasure on the Sabbath, but too expensive for weekday enjoyment. Mr. John Burns's speeches at the conference we may correctly summarise as apologies for the singular barrenness and lack of achievement of any purpose, however logical and latently possible of social betterment, when it depends upon the goodwill of the landlord and the property owner. We instinctively feel that if town planning is to be really successful architecturally, more restrictions must be placed upon the activities of building owners and their architects, to whom restriction of any kind is anathema, and freedom of action, which, in the case we are now considering, is evidently and admittedly an absolute deterrent, the only deity which is genuinely adored. The profession generally must look closely to its laurels and determine by effective organisation and co-operation that the Town Planning Conference shall be something more than an elaborate feu d'artifice to a sad and dismal future performance. Nothing is carried out orderly, and we shall find that as towns have muddled into ugliness there will only be questions as to how to muddle out. There is rarely, if ever, a clean slate upon which we may lay our plan, but rather a regrettable smudge on a foundation which will support little erasure. The Ruislip town planning competition so admirably brought about by the persistent efforts of Mr. F. M. Elgood, F.R.I.B.A., will undoubtedly remain a monument in the history of the movement, not so much on account of its being one of the first moves under the Act, but as a constant reminder of the steady effort and personal interest in the important preliminaries necessary to the carrying out of Part II. of the Act—a dull and uninteresting struggle the record of which successfully chills the enthusiasm of the average manufacturer of the town plan design of the Turkey carpet or linoleum type. The Ruislip competition was thoroughly justified by its results, but I think it doubtful whether town planning competitions should be general, for if the architects of a district or a suburb co-operate with the object of pressing the local council into action a scheme of some kind should take the field in order that local problems and their solution may assume a definite practical shape. If this be so, it must naturally follow that competitors in any town planning competition that may be launched may suffer greatly in the preparation of their schemes due to a lack of that close knowledge of local conditions that a residence within the area concerned alone can give, and, further, the occasional acquisition of competitive work by architects comparatively unknown, but residing in the district and in close touch with local affairs lends colour to the impression that many competitors must have completely lost the grasp of an adequate solution to the problem set them by their lack of local knowledge.

An important preliminary to the adoption of a town planning scheme is the spirit of its inception. If it is merely economical in its aspect, and it is desired to see a quick return for the capital expended at a high rate of interest, the final result of the scheme will be disappointing to all concerned, commercially on account of the slowness with which sites will be taken up, due to the desire of the promoters to obtain the best market and best architectural result at the same time, rendered incompatible in practice by the amount of capital to be expended in building operations to suit ideal conditions, and the loss of interest on that capital due to the lengthy interval which elapses before adjoining sites are built upon, and the scheme is sufficiently developed to be commercially successful. Architecturally on account of the panic which supervenes, due to lapse of time and subsequent acceptance of any scheme of architectural bathos and individual advertisement resulting in a deplorable patchwork, successful perhaps as regards traffic

and mere utility, but void of architectural art. As a rate reducing machine, therefore, town planners must look to the far distant future for financial return if the scheme is to be a genuine success or even appropriate thereto.

Before a local authority actually prepares a town planning scheme it must satisfy the Local Government Board that there is a *prima facie* case for making a scheme (Section 54 (2) and Schedule 5), and after making formal application must receive an authorisation for them to prepare one. A like authorisation is required to enable a local authority to adopt a scheme proposed by all or any of the owners of any land which may be the subject of a scheme. The placing into operation of Part II. of the Act depends upon the creation of local opinion as to the necessity thereof, and steady pressure must be brought to bear upon local authorities. It is obvious therefore that the creation of voluntary groups for the study of local conditions combined with the co-operation of all architectural bodies, a point this Guild has for one of its objects, and the preparation of a practical scheme, and its imposition on public opinion is imperative.

The evident necessity that town planning should receive some consideration and thought in the vertical, as well as in the horizontal, as Mr A. E. Rickards has pointed out, forces on the student of this question the method by which the best result may be obtained. The initial obstacle which oppresses the matter in relation to streets is that of advertisement, which, generally speaking, has two aspects, that of the architect and that of his client. The architect, the man whose work we all desire to see, and who is anxious that his designs should be as unfettered as possible by existing structures in order to exhibit his skill and ability to the best advantage is evidently an advertiser of his art. The client is equally desirous of exhibiting his wealth or his pre-eminence in relation to his neighbours, or of advertising the business his building is to house. We often marvel at the latter spending money on architectural effects at all, for a plain plaster front or a prize design for a facade in glazed bricks would form a much better background for the enormous gilded letters or electric signs that the art of advertising has made us acquainted with. Perhaps his idea is that architectural ornament offers trusty points of support to the homely spider weaving his web between them and the aforesaid lettering. The commercial aspect of the question is so strong that it would seem that any attempt to suppress or modify the advertisement either of the design on the part of the architect or the imposed abominations on the part of the client would cause nothing short of a general revolt. The large sums spent on this latter type of advertisement indicate the supreme faith the business man has in their efficacy. For him architecture is a thing apart, and to force upon him the practical consideration of what he has hitherto considered an abstraction is an enterprise of high aim, and can only be secured by official imposition. Evidently the best means of achievement is, as Professor Beresford Pite has pointed out, that more architects should serve on local authorities.

Doubtful as the reception of the issues of town planning are to the public, still more so are they to our profession. The struggle of the individual against the collective interest was never better illustrated. The proposals of Mr. Paul Waterhouse in relation to city architecture exhibit an outlook over the future to which all reformers in all questions relating to government and organisation ultimately agree. The freedom of the "artist" in our city architecture has had its day, we see its results and deplore them. We are incapable of directly managing our own professional affairs, so we must call in outside aid in order that the artistic betterment of our streets may be attained, to see ourselves practically reduced to the position of assistants to a borough architect in that province of our profession. Design, which we have hitherto regarded as peculiarly our own, in addition to the fetters with which building Acts and local authorities have loaded us, seems a doleful fate even for the most unimportant acolyte in the temple of art. Yet it must be admitted that it is a fate we fully deserve, and furthermore will accomplish much in the direction of our better architectural education.

That Mr. Paul Waterhouse's principles are correct cannot be doubted. The position is that our work suffers from lack of public appreciation as well as co-operation in our own ranks. The remedy is obvious, despite the objections of an individualist like Mr. T. G. Jackson, R.A., who has attempted to draw a risible picture of the collisions of styles under the domination of borough architects; we must impose our views upon the public and ourselves by legal pressure.

As the bye-laws of local authorities and building Acts have not only taught us the importance of many constructional and sanitary matters, so the surveillance of a legal authority in matters of design will render us more capable.

The result, of course, cannot be the achievement of satisfaction to the critical artist except perhaps through dreary stages of incomplete and indecisive effort. But our profession has such a leeway of individual progress to make up, such a crowd of incomplete architects and doubtful architecture, that to pay any further attention to the caprices of the individual practitioner and his lack of education, or to bring any forcible influence to bear by appeals to professional unity are now clearly seen to be ineffective and ridiculous. The problem is how to obtain control of would-be architects, and if we cannot do so by methods in vogue since the term architect was first used, we must do so by legal influence.

(To be concluded.)

VARIETIES.

MR. TEMPLE MOORE, F.R.I.B.A., has been appointed architect to the Dean and Chapter of Rochester Cathedral.

THE Town Council of Bournemouth at their last meeting approved seventy plans for new houses to be erected within the borough.

PLANS were passed on Wednesday by the West Riding County Council for the addition of a new wing to the County Hall, Wakefield, at an estimated cost of 32,000*l.*

THE Pontypool Urban District Council are going to obtain plans in competition from local architects for three types of workmen's dwellings to cost respectively 128*l.*, 153*l.*, and 188*l.*

THE Ilfracombe District Council are about to invite competitive plans for a free library to be erected in Wilder Road. Mr. Andrew Carnegie has offered 3,000*l.* towards the scheme.

THE Windermere District Council contemplate borrowing 32,500*l.* for sewerage and sewage disposal and 9,000*l.* for providing a park and developments around the lake side at Bowness.

THE London, Tilbury, and Southend Railway Company propose to erect two generating stations—one at Tilbury and the other at Thames Haven—for the purpose of the electrification of their railway.

THE Guardians of the Rochford Union invite architects practising within Rochford Hundred who may be willing to prepare plans, &c., for and supervise the erection of new infirmary block and nurses' home at the workhouse to apply to the Clerk on or before Monday, the 20th inst.

THE Barnsley Town Council have under consideration a recommendation from the General Purposes Committee that a new Town Hall should be built as a memorial to the late King Edward VII. The existing building was erected about eighty years ago at a cost of 1,500*l.* The present rateable value of the town is 170,000*l.*

PLANS have been prepared on behalf of the trustees of the Alkrington Estate, Middleton, for the development of about three hundred acres as a garden city. These plans only await the sanction of the Local Government Board, as they have been already approved by the Middleton Corporation.

THE Southport Town-planning Committee has before it several schemes for the development of the town. Plans have been supplied for the laying out of St. George's Place in Lord Street; and the borough surveyor has received instructions to prepare a plan for the general improvement of the whole of Lord Street. The Committee has decided to make a complete inspection of the town with a view to further improvements.

THE Stoke-on-Trent County Borough Council have adopted a report by Mr. C. H. Yeaman, the electrical engineer, on the establishment of a transmission system at a cost of 60,000*l.*, made up as follows:—New generating station, 20,000*l.*; cables to sub-stations, 20,000*l.*; sub-stations, 10,000*l.*; and additional mains and distribution, 10,000*l.*

MESSRS. HARRY DAVIES & DAVIES, architects, Cardiff, have prepared the development scheme for the new colliery village of Edlington, near Doncaster, which is now in course of erection. The plans show 823 cottages, of which about 100 are already completed. The colliery is owned by the Staveley Coal and Iron Company, Ltd., who expect to have between two and three thousand men engaged in a few months time. Eventually the number of houses will be 1,400.

THE Luton Education Committee invite designs for an elementary school to be erected in Charles Street. Architects

wishing to compete are to submit their names by March 21 to the Secretary of Education. Of these, six architects will be chosen to send in designs, and the Committee, with professional assistance, will select the one they consider most suitable. The author of such design will be employed to carry out the work. To the unsuccessful selected competitors an honorarium of 5*l.* 5*s.* each will be paid.

THE Liverpool Cathedral Executive Committee state that the second portion of the building, the choir and transepts will be ready for consecration in the early part of the year 1915. The sum of 43,750*l.* is still required for this work. The sum of 36,000*l.* has accrued as interest on the capital sums given to the fund. The walls of the choir are now 77 feet and 88 feet high respectively, and those of the chapter house are 17 feet high. There are at present 221 men employed on the building.

At a meeting on the 10th inst. of the Aberdeen Provincial Committee for the Training of Teachers block plans of a proposed new training centre were submitted. The building will occupy the square block of ground formed by St. Andrew Street, Charlotte Street, John Street, and North St. Andrew Street, and the area is approximately about 1½ acre. The United Free Church Training College occupied part of the site, and it is proposed that the demonstration school should be retained. The estimated cost is 47,500*l.* The Committee after discussion agreed that the plans be thrown open to competition among the eight architects already selected.

DURING the past few weeks hundreds of thousands of people have inspected the model of the All Red route at the junction of Aldwych and the Strand. This is a well-executed model of the All Red route, which, at a cost of 60,000*l.*, is being erected in the Crystal Palace grounds in connection with the Festival of Empire. The Strand model has just been rendered even more attractive by means of electricity. Plaster windows have been cut out of the six buildings, so that the interiors may be illuminated. Other lighting effects include miniature standard lamps dotted about the walks. Most entertaining of all are the two little electric trains which run over 120 feet of railway line. At frequent intervals free lectures, lasting about seven minutes, are given.

THE north aisle of Rochester Cathedral, which has recently been restored at a cost of 600*l.*, was dedicated on Saturday last. In the course of the work some fifteenth century windows were uncovered, one being since entirely renewed and the others repaired; the old walls have been uncovered and re-plastered; stone work has been cleaned; and new oak doors have been erected. The flat leading to the roof over the staircase has been lowered to below the level of the windows in order to let in more light. The old pilgrim steps have been brought to light, but in order to prevent further wear iron raisers have been placed over them.

IN answer to a question in the House of Commons, Mr. Haldane has informed Mr. Watt (Glasgow College) that the form of the bills of quantities supplied in connection with the tenders for the erection of Redford Barracks had for many years been in general use for War Department building contracts without question. Quantities were issued to twenty-four Scottish, one Irish, and four English firms, of whom eleven Scottish and two English firms did not eventually tender. The reasons for their not doing so were unknown except in the case of one Scottish firm, which gave the form of the bills of quantities as the reason. A representation on the subject was received from the Edinburgh Building Trades Association, and was under consideration.

A SPECIAL meeting of the Council of the Glasgow Institute of Architects was held on the 9th inst., when the following office-bearers were appointed, viz.: President, Mr. John B. Wilson, F.R.I.B.A.; vice-presidents, Messrs. A. N. Paterson, M.A., F.R.I.B.A.; J. K. Hunter, F.R.I.B.A.; and R. D. Sandilands, F.R.I.B.A.; secretary and treasurer, Mr. C. J. MacLean, writer, 115 St. Vincent Street; auditor of professional accounts, Mr. George Bell, F.R.I.B.A. The various committees for the year were also appointed. The following were admitted as associate members of the Institute, viz.: Messrs. W. J. Wright, Bearsden; R. Carswell, Yoker; G. L. Grieve, Yoker; D. W. M'Math, Glasgow; J. King, Wishaw; G. A. Boswell, Glasgow; G. Lennox, Glasgow; and J. W. Weddell, Glasgow. The following were admitted as student members, viz.: Messrs. J. R. W. Reid, J. M. Honeyman, and A. G. Lochhead. A number of applications by members of the Institute for licentiatehip of the Royal Institute of British Architects were passed. The president was appointed an examiner in the Glasgow School of Architecture.

THE
Architect and Contract Reporter.

FRIDAY, MARCH 24, 1911.

Published weekly, subscription 19s. per annum for Great Britain, and for Colonial and Foreign subscriptions £1 6s. 6d. All business communications to the Managing Director,

P. A. GILBERT WOOD,

Publishing Offices, 6-11 Imperial Buildings, Ludgate Circus, London, England.

Telephone No. 4725 Holborn.

Branch Offices at 43 OLD QUEEN STREET, S.W., Messrs. W. HAY FIELDING & CO. being the representatives for all business purposes.

The Birmingham Offices are at 102 COLMORE ROW.

Entered in the United States of America as second-class matter.

AGENTS FOR AMERICA:

The International News Co., 5 Bream's Buildings, Chancery Lane, London, England, and New York.

AGENTS FOR CANADA:

Messrs. WM. DAWSON & SONS, Ltd., 91 Church Street, Toronto, to whom all correspondence for Subscription and Advertising Rates should be made.

Subscription \$5.20.

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SOUTH AFRICA: Central News Agency, Ltd.

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EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit the insertion of lengthy communications.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

As great disappointment is frequently expressed at the nonappearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

ARGENTINE.—April 20.—A competition of plans for a hospital and school of medicine, to be erected at Rosario in celebration of the Argentine Centenary at a cost of about 149,000l. Prizes of 1,050l., 700l. and 440l. will be awarded. A copy of the conditions, &c., may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, London, E.C., where also a limited number of copies are available for distribution. Plans must be sent to the "Secretaria de la Comisión Pro-Hospital é Instituto de Enseñanza Médica del Centenario, Calle Córdoba 1230," Rosario.

ATHENS.—Aug. 21.—An international competition of plans is invited by the Greek Ministry of the Interior (Public Works) for the erection of a Court of Justice at Athens. The cost of the building must not exceed 160,000l. A first prize of 800l., and a second prize of 320l. will be awarded. The Greek Official Gazette, containing particulars (in Greek and in French) may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

BRADFORD.—May 1.—The Board of Management of the Bradford Infirmary invite plans with estimates for a new infirmary in Duckworth Lane. Mr. Keith D. Young, F.R.I.B.A., will act as assessor. Deposit 3l. 3s., which will be refunded on receipt of a bona-fide design or if block plan, instructions, &c., are returned within a month after receipt of replies to competitors' questions. The Secretary Superintendent of the Royal Infirmary, Bradford. (For further particulars see advertisement, January 13.)

BULGARIA.—April 30.—An international competition will be held of plans for a building which it is proposed to erect in Sofia for State and municipal offices. The following four prizes will be given, viz., 280l., 120l., 80l., and 4l. Applications must be sent to the "Kreis-Permanenz-Ausschuss," Sofia.

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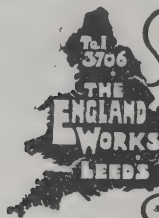
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CHESTERFIELD.—May 15.—The Standing Joint Committee for Derbyshire invite architects practising in the county to submit designs for a Court-house and lock-up to cost 8,000*l.* Mr. F. Baggallay, F.R.I.B.A., will act as assessor. Deposit 3*l.* 3*s.* Apply to Mr. G. C. Copstick, F.R.I.B.A., County Offices, Derby.

COVENTRY.—April 1.—The Corporation contemplate the refection of municipal offices in the centre of the city, and also possibly a town hall, and accordingly invite competitive designs. Mr. E. Guy Dawber, F.R.I.B.A., will act as assessor. Deposit 2*l.* 2*s.*, which will be refunded on receipt of a bona-fide design or if the particulars are returned within fourteen days of receipt. Mr. Geo. Sutton, town clerk, 10 Hay Lane, Coventry. (For further particulars see advertisement, November 18.)

CUBA.—April 15.—An international competition has been arranged for a Presidential Palace to be erected at Havana at a cost of about 205,000*l.* Premiums of 10,000 pesos and 1,000 pesos will be awarded. Conditions may be seen at the Cuban Legation, 3 Grosvenor Mansions, Victoria Street, S.W., or the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

MANCHESTER.—March 31.—The Corporation invite designs for a Library and Art Gallery upon the Piccadilly site in the centre of the city. The Preliminary Competition closes March 31. The authors of ten selected designs will compete in the Final Competition. Mr. Reginald Blomfield, F.R.I.B.A., will act as assessor, in connection with the city architect. Apply for particulars to Mr. Thomas Hudson, Town Clerk, Town Hall, Manchester. (For further particulars see advertisement, January 6.)

ROMFORD.—The Town Planning and Modern House and Cottage Exhibition at Gidea Park, Squirrels Heath, in the Romford Garden Suburb, summer 1911. Class IV.—Town plan of Gidea Park—prizes of 100*l.* and 50*l.* Class VII.—Open to builders. For excellence of workmanship and construction in the erection of a cottage in Class I. or II.—first prize, gold medal and 100*l.*; second prize, 50*l.* Final dates for designs; Class IV., March 31, 1911. Mr. Michael Bunney, A.R.I.B.A., hon. secretary, 33 Henrietta Street, Strand, W.C.

SOUTHAMPTON.—The Council of Hartley University College invite designs for the proposed new buildings. Mr. H. T. Hare, F.R.I.B.A., will act as assessor. The deposit of 1*l.* 1*s.* with the application will be returned if the conditions are returned within fourteen days. Mr. D. Kiddle, registrar, Hartley University College, Southampton.

WALES.—May 5.—The Corporation of Swansea invite architects to submit designs and estimates for the Castle Street improvement. Deposit 1*l.* 1*s.*, which will be refunded on receipt of a bona-fide design or if block plan and particulars are returned within a fortnight after receipt. The architect appointed to prepare the working drawings will be paid not more than 250*l.*, and a premium of 50*l.* will be paid for the second design. Mr. S. S. Reay, F.R.I.B.A., will act as assessor. Apply to the Town Clerk, Guildhall, Swansea.

CONTRACTS OPEN

BARMING HEATH.—April 1.—For proposed iron staircase and glass shelter at the Kent County Lunatic Asylum. Deposit 10*s.* 6*d.* The Engineer and Clerk of Works of the Asylum, Barming Heath, nr. Maidstone.

BARMING HEATH.—April 1.—For proposed internal alterations to 4 and 5 wards (male and female) at the Kent County Lunatic Asylum. Deposit 5*s.* The Engineer and Clerk of Works of the Asylum, Barming Heath, nr. Maidstone.

BARROW-IN-FURNESS.—March 28.—For erection of proposed fire station in Abbey Road. Deposit 1*l.* 1*s.* The Borough Engineer's Office, Town Hall.

BEDWORTH.—March 28.—For the enlargement of the boys' central schools, Bedworth, near Coventry. Mr. F. Foster, architect, Masonic Buildings, Coventry.

BEVERLEY.—March 27.—For the following works, for the Education Committee of the East Riding County Council, viz.: (a) Additions and alterations to the Nunkeeling-with-Bewholme Council school, and for the conversion of two cottages into a teacher's house; (b) additions and alterations to the Council school at Giberdyke. Deposit 1*l.* 1*s.* each contract. The Building Surveyor, County Hall, Beverley.

BIRMINGHAM.—April 11.—For the erection of a Council school in St. Benedict's Road, Small Heath. Send 2*l.* deposit on or before March 25 to the Finance Office of the Education Department, Edmund Street, Birmingham.

BRADFORD.—March 27.—For the various works required in erection of two houses in Idle Road. Apply to Messrs. Walker & Collinson, architects, Exchange Buildings, Bradford.

BRADFORD.—March 27.—For work required to be done in alterations at the Drummond Road School. The City Architect, Town Hall, Bradford.

CASTLEFORD.—March 27.—For alterations at Castleford, Temple Street, Council girls' school. The work consists of new screens, pulling down divisional wall, &c., for the West Riding County Council Education Department. Mr. B. Leah, Education Office, Castleford.

CHADDERTON.—April 6.—For the following works in the construction of the recreation ground:—(1) Supply and erection of about 1,100 yards of unclimbable wrought-iron railing, together with entrance gates; (2) draining, levelling, turfing, planting, and path-making; (3) erection of conveniences, shelters, pavilion, and caretaker's house. Deposit 1*l.* 1*s.* The Surveyor's Office, Town Hall, Chadderton, Lancs.

CLAYTON WEST.—March 28.—For the various works in erection of a warehouse at Clayton West (Yorks). Send names by March 28 to Messrs. S. Jackson & Son, 11 Tanfield Chambers, Bradford.

CUMBERLAND.—April 1.—For the whole of the work in connection with erection and completion of a special subjects room, Longtown Council school; also for improvements to Blackbank and Rhodds Council schools. The Cumberland Education Committee's Clerk of Works, 13 Earl Street, Carlisle.

DURHAM.—April 11.—The County Council of Durham invite sole tenders for the erection of new schools at Shiney Row (for about 820 scholars) and New Seaham (for about 450 scholars.) Mr. W. Rushworth, Shire Hall, Durham.

EAST HOWE.—April 13.—For erection of an elementary school at East Howe, Kinson, Dorset. The County Surveyor's Department, County Offices, Dorchester, and Messrs. Fletcher, Son & Brett, Wimborne.

ERDINGTON.—March 29.—For the erection of lavatories for both sexes and a pavilion shelter at Short Heath Park. Deposit 2*l.* 2*s.* Mr. H. H. Humphries, engineer, Council House, The Park, Erdington.

FAVERSHAM.—April 3.—For the following works in connection with a scheme of sewerage and sewage disposal, viz.: Contract No. 5, which comprises the construction of a sewerage pumping station and screen house, together with about 410 yards of 36 inch main outfall concrete tube sewer, and about 718 yards of 18 inch cast iron rising main, also roads, fences, and other incidental works. Deposit 5*l.* Mr. S. Percy Anderson, borough surveyor, 20 West Street, Faversham.

FOWLMERE.—March 30.—For erection of a Cemetery Chapel at Fowlmere, Cambridgeshire. Mr. S. French, architect, Llandaff Chambers, Regent Street, Cambridge.

FRANSHAM.—April 1.—For erection of a house and stable at Fransham, Norfolk. Messrs. A. F. Scott & Son, architects and surveyors, 24 Castle Meadow, Norwich.

GILDERSOME.—March 30.—For the various works required in the erection of a residence in Town Street, Gildersome (Yorks). Mr. T. A. Buttery, F.I.A.S., architect, Queen Street, Morley, and 1 Basinghall Square, Leeds.

GLASGOW.—April 4.—For the following works required in connection with the proposed permanent way stores, &c., in Barrland Street, viz., mason, brick, carpenter, joiner, steel and cast-iron, slater, plumber, plaster, and painter works. The whole to be let as one contract. Mr. Jas. Dalrymple, general manager, 46 Bath Street.

HALBERTON.—March 29.—For building boundary walls to the extension of the churchyard. Mr. F. G. Brook-Fox, M.I.C.E., Townsend House, Halberton.

HALIFAX.—March 28.—For the execution of the mason's, carpenter's and joiner's, and slater's and plasterer's work required in erection of a waterman's house, at Widdop. Mr. Richard J. Hartley, C.E., waterworks engineer, Gibbet Hill, Halifax.

HINCKLEY.—March 30.—For erection, completion and maintenance for six months after completion of additions to the workhouse at Hinckley. Deposit 2*l.* 2*s.* Mr. W. T. Grewcock, architect, New Street, Leicester.

HOLMFIRTH.—March 29.—For erection of a brick chimney stack at Bottoms Mills. Messrs. Brown & Shaw, architects, Dunford Road, Holmfirth, Yorks.

HULL.—March 29.—For the steel roof work required in the extensions to the Electricity Works. The work consists of 48 trusses of spans varying from 12 feet 6 inches to 65 feet, together with rolled joists and other steel work, amounting

altogether to about 80 tons. Deposit 1*l.* Mr. A. E. White, M.I.C.E., city engineer, Town Hall, Hull.

IRELAND.—March 27.—For the erection of new premises at Cavan for the Ulster Bank, Ltd. Deposit 2*l.* 2*s.* Messrs. Blackwood & Jury, Ms.R.I.A.I., architects, 41 Donegall Place, Belfast.

IRELAND.—April 3.—For erecting 16 houses at Trim. Deposit 1*l.* Mr. P. Healy, town clerk, Town Hall, Trim.

IRELAND.—April 24.—For the erection of County Council Offices at Navan, Co. Meath. Deposit 1*l.* 1*s.* Mr. J. J. Inglis, architect, 5 Nassau Street, Dublin.

KEIGHLEY.—March 28.—For the various works (except joiner's) required in erection of two pairs of cottages at Park Lane. Mr. Fred. Wilkinson, architect, Elm Bank, Park Lane, Keighley.

KNUTSFORD.—March 31.—For carrying out certain work in adapting and putting in repair premises, Clifton House, Knutsford, for the Guardians of Bucklow Union, viz.: (a) Plumbing, drainage work, &c.; (b) brickwork, joiner's work, and small general repairs. Deposit 3*l.* 3*s.* Mr. J. H. Hall, F.S.I., architect and surveyor, 1 Cooper Street, Manchester.

LEEDS.—March 29.—For erection of two hostels for women students at the Training College, Beckett's Park, Headingley. Mr. A. E. Kirk, architect, Albion Street, Leeds. Send names and 2*l.* 2*s.* deposit at once to Mr. James Graham, Secretary for Education, Education Department, Calverley Street, Leeds.

LEPTON.—March 31.—For any or all of the various works required in erection of two dwelling-houses and additions to four dwelling-houses in Rowley Lane, Lepton, Huddersfield. Messrs. J. Kirk & Sons, architects, Huddersfield.

LIVERPOOL.—March 29.—The Guardians of the West Derby Union invite tenders from bona-fide contractors, having premises and workshops within the West Derby Union, the parish of Liverpool, or the township of Toxteth Park, and carrying on business therein, for the new ovens, additions and alterations at Belmont Road Workhouse. Deposit 2*l.* 2*s.* Mr. C. H. Lancaster, architect, Brougham Terrace, West Derby Road, Liverpool.

LONDON.—March 30.—For general repairs and painting at the Plashet Schools, Upton Park, E. Mr. W. T. W. Aldwinckle, F.R.I.B.A., 20 Denman Street, London Bridge, E.

LONDON.—March 27.—The Board of Management of the Miller General Hospital for South-East London, Greenwich Road, S.E., invite applications from builders who desire to tender for the proposed extension of the hospital, which is to consist of a new ward block, comprising basement, three wards of seventeen beds and offices (length of building, including lift and staircase tower, about 120 feet), operating theatre with accessory rooms, and sundry alterations of existing buildings. Send names to Mr. H. A. Bone, secretary.

LONDON.—April 5.—For the extension of the nurses' home at their Infirmary, Archway Road, N., for the Guardians of Holborn Union. Send names and 10*l.* deposit by March 28 to Mr. A. Saxon Snell, F.R.I.B.A., 22 Southampton Buildings, Chancery Lane, W.C.

LONDON.—April 5.—For the extension of the South-Western District Post Office (second contract), for the Commissioners of H.M. Works and Public Buildings. Mr. J. Rutherford, 22 Carlisle Place, London, S.W.

LONG SUTTON.—April 3.—For improvement works and repairs to the Corn Exchange, Long Sutton (Lincs.). Mr. W. H. H. Davis, architect, 2 York Row, Wisbech.

MANCHESTER.—For building a new church in Manchester. Apply to Mr. H. E. Lingen Barker, architect, 78 King Street, Manchester.

MANCHESTER.—April 5.—For additions and alterations to the store rooms, &c., at the Styal Cottage Homes, for the South Manchester Board of Guardians. Deposit 2*l.* 2*s.* Messrs. Charles Clegg & Son, architects, 21 Spring Gardens, Manchester.

MANCHESTER.—April 6.—For alterations and additions to cottages, William Street and Tubal Street, Ancoats, for the Midland Railway Company. The Engineer, Derby Station, M.R., Derby.

MARSDEN (Yorks).—March 27.—For the erection of 53 dwelling-houses and construction of new streets at Smithy Holme, Marsden, for the Marsden Equitable Industrial Society, Ltd., Yorks. Mr. J. Berry, architect and surveyor, 3 Market Place, Huddersfield.

MILFORD HAVEN.—March 31.—For erection of a residence at Murray Crescent. Mr. J. B. Gaskell, architect and surveyor, Milford Haven.

MORLEY.—April 4.—For the various works required erection of the new pavilion at the junction of High Street and South Queen Street, Morley (Yorks.). Deposit 1*l.* Messrs. Howorth & Howorth, architects and surveyors, Baileys Chambers, Cleckheaton.

MOSSLEY.—March 29.—For the erection of Milton Court school. Send names and 1*l.* 1*s.* deposit by March 29. Mr. F. Q. Farmer, architect, 20 Sir Thomas Street, Liverpool, and 1 Melbourne Street, Stalybridge.

MOUSEHOLE (Cornwall).—April 8.—For the erection and completion of the proposed Council school. Mr. Sampson Hill, architect to the Cornwall Education Committee, Green Lane, Bedruth.

MUSBURY.—March 31.—For the erection of a rectory, Musbury, near Axminster. Send names by March 31. Mr. Harbottle Reed, F.R.I.B.A., architect, 12 Castle Street, Exeter.

MUTFORD.—May 1.—For the erection of a Council school at Mutford, near Lowestoft, for about 120 children. Send names and 1*l.* 1*s.* deposit by March 25 to Mr. J. Welton, surveyor, County Hall, Ipswich.

NORTHALLERTON.—April 4.—For carrying out additions to Northallerton Station, for the North-Eastern Railway Co. Mr. William Bell, the company's architect, York, or the Stationmaster's Office, Northallerton.

NOTTINGHAM.—April 3.—For the erection of a boiler house and chimney at Burton Joyce Pumping Station, near Nottingham. Deposit 1*l.* 1*s.* Mr. F. W. Davies, water engineer, St. Peter's Churchside, Nottingham.

PLYMOUTH.—April 3.—For erection of barracks at Lamhay Green for the Devon Territorial Force Association. Deposit 2*l.* 2*s.* Mr. T. R. Kitsell, A.R.I.B.A., George Street Chambers, Plymouth.

REDCAR.—March 31.—For erection of shelters adjoining the lavatories on the Esplanade. Mr. J. Howcroft, surveyor, 2 West Terrace, Redcar.

SANDBACH.—March 31.—For erection of an upper standards Council school. Deposit 1*l.* 1*s.* Messrs. Alfred Price & Son, architects, Sandbach.

SCOTLAND.—March 27.—For the mason, carpenter, slater, plaster, and plumber works of cottage to be erected in Ellon. Mr. W. Davidson, architect, Ellon.

SCOTLAND.—March 28.—For mason, carpenter and slater work of additions to buildings at Kemnay, for the Don C. operative Society. Mr. W. Bremner, Alehousewell, Kemnay.

SCOTLAND.—April 3.—For goods shed, offices, and relative works, on the site of the existing Aberdeen Goods Station for the Caledonian Railway Co. Deposit 2*l.* 2*s.* The Company's engineer, Buchanan Street Station, Glasgow.

SCOTLAND.—April 5.—For erection of Maybole new post office, for the Commissioners of H.M. Works and Public Buildings. The Postmaster at Maybole Post Office or H.M. Office of Works, 3 Parliament Square, Edinburgh.

SHEPTON MALLET.—March 31.—For the erection of a drill hall and miniature rifle range off the Charlton Road for the Somerset Territorial Force Association. Deposit 1*l.* 1*s.* Mr. A. J. Pictor, A.R.I.B.A., architect, Bruton.

SHELLEY.—March 30.—For erection of a dwelling-house in Far Lane, Shelley, near Huddersfield. Mr. J. Berry, architect and surveyor, 3 Market Place, Huddersfield.

SHILDON.—April 4.—For erection of an institute at Shildon, for the North-Eastern Railway Co. Mr. William Bell, the company's architect, York, or the Station Master's Office, Bank Top, Darlington.

STANSTED.—April 15.—For erection of a girls' and infants' public elementary school at Stansted (Essex), for 216 children, and alteration to boys' school. Send names and 2*l.* 2*s.* deposit by March 25. Mr. Frank Whitmore, architect, 73 Duke Street, Chelmsford.

STOKE-ON-TRENT.—March 25.—For erection of gentlemen's conveniences, Crown Bank, Hanley. Send names and 2*l.* 2*s.* deposit by March 25 to Mr. A. Burton, A.M.I.C.E., F.S.I., Town Hall, Stoke-on-Trent.

STROUD.—April 18.—For the provision and erection of a refuse destructor and other works connected therewith. Deposit 1*l.* 1*s.* Mr. G. P. Milnes, A.M.I.C.E., engineer, Stroud.

SWINDON.—April 4.—For the enlargement of Swindon Head Post Office. The Postmaster, Swindon, and H.M. Office of Works, Storey's Gate, London, S.W.

TRURO.—April 3.—For erection of 17 artisans' dwellings on land at Waterloo. Mr. F. A. Barnes, A.M.I.C.E., city engineer and surveyor, Municipal Buildings, Truro.

ULVERSTON.—April 7.—For erection of a dwelling-house at Oubas Hill. Mr. J. Wilson, 28 Oubas Hill, Ulverston.

WALBOTTLE.—April 3.—For erection of fifty-eight houses at Walbottle (Northumberland), for the Newburn Urban District Council. Mr. Thos. Gregory, surveyor, the Council Offices, Newburn-on-Tyne.

WALES.—March 31.—For new schools at Gellifaelog for 1,150 children, for the Merthyr Tydfil Education Committee, viz.: (1) Infants' school for 450 children, (2) boys' school for 350 children, (3) girls' school for 350 children, (4) manual instruction and combined domestic science block, (5) playground, drainage, &c. Deposit 5*l.* 5*s.* Mr. J. Ll. Smith, M.S.A., architect, Aberdare.

WALES.—March 31.—For erection of a covered play shed at the West Monmouthshire school, Pontypool, and also for removal and re-erection of the existing cycle house. Messrs. Fisher & Sons, architects, Albion Chambers, Pontypool.

WALES.—March 31.—For erection of twenty workmen's houses and eleven officials' houses, comprising the first section of the Oakdale Village, Blackwood, for the Oakdale Navigation Colliery Co., Ltd. Mr. A. F. Webb, architect and surveyor, Blackwood, Mon.

WALES.—March 31.—For certain enlargements, alterations and repairs to Christ Church, Ebbw Vale (Mon.). Mr. G. E. Halliday, F.R.I.B.A., 19 Castle Street, Cardiff.

WALES.—April 3.—For erection of a wood pavilion for the Royal National Eisteddfod in the Park, Carmarthen. Deposit 1*l.* 1*s.* Mr. J. C. H. Portnell, general secretary, Eisteddfod Offices, Carmarthen.

WALES.—April 4.—For work of erection of a domestic subjects centre at Newtown, Montgomeryshire. Deposit 1*l.* 1*s.* Mr. Llewellyn Phillips, clerk, County Education Offices, Newtown.

WALES.—April 4.—For erection of an infants' school at Mount Pleasant, Merthyr Vale. Deposit 2*l.* 2*s.* The Deputy Surveyor, Town Hall.

WALES.—April 6.—For erection of addition of two classrooms (100 places), new cloak-room, &c., at Cynlais Council school, Ystradgynlais, Brecon. Mr. C. W. Best, surveyor to the committee, County Hall, Brecon.

WESTON-SUPER-MARE.—For the erection of a Wesleyan Methodist school-chapel in Hill Road. Messrs. Ed. Trobe & Weston, F.R.I.B.A., 44 Corn Street, Bristol.

WINCHESTER.—April 3.—For repairs to and relining six arches of Cams Bridge. Deposit 1*l.* 1*s.* Mr. W. J. Taylor, County Surveyor, The Castle, Winchester.

WOKING.—March 28.—For alterations to Woking Head Post Office. The Woking Head Post Office and H.M. Office of Works, Storey's Gate, London, S.W.

WOMBWELL.—April 6.—For the following works, in alterations to Wombwell, Barnsley Road Council school, for the West Riding Education Committee, viz.: Builder, joiner, plumber, plasterer and painter. Education Architect, County Hall, Wakefield. Send 1*l.* to the West Riding Treasurer, County Hall, Wakefield.

WOOTTON BASSETT.—April 2.—For erection of a police station at Wotton Bassett, Wilts. Deposit 1*l.* 1*s.* Mr. J. G. Powell, County Surveyor, Trowbridge.

WORKSOP.—March 28.—For alteration to offices, for the Worksop Urban District Council. Mr. J. P. Crowther, A.M.I.E.E., manager and engineer, Electricity Works, Worksop.

WREXHAM.—April 4.—For alterations and additions at Wrexham Station, for the Great Western Railway Co. The Engineer at Shrewsbury Station.

TENDERS.

BRIGHTON.

For the erection of a public elementary school in Coombe Road. Messrs. T. SIMPSON & SON, architects, Brighton.

Field & Cox	£9,710	0	0
Sandell & Sons	9,690	0	0
Penfold	9,634	0	0
Parsons & Sons	9,467	0	0
Longlev & Co.	9,359	0	0
Pethick Bros., Ltd.	9,310	1	10
Allen & Co.	9,303	0	0
Bostel Bros.	9,111	9	5
Cook & Sons	9,050	7	5
Hockley & Co.	8,782	0	0
Gathercole Bros.	8,749	0	0
ROWLAND BROS., Horsham (accepted)	8,732	0	0

BOLTON-UPON-DEARNE.

For the erection of forty-eight houses at Highgate, for the Urban District Council. Mr. J. W. WILSON, surveyor, Council Offices.

Accepted tenders.

Dickinson, builder, Bolton-on-Dearne	£5,093	0	0
Bateman, joiner, Thurnscoe	2,165	5	1
Meanley, plumber, slater, painter, and fencing, Mexborough	1,007	18	3
M'Portlain, plasterer, Hoyland	524	3	2

BRIDGWATER.

For erection of a court-house and police station in Northgate, Bridgwater. The Borough Surveyor, Bridgwater.

Merrick & Son	£9,140	0	0
Stephens, Bastow & Co.	8,556	0	0
Ashton & Son	8,350	0	0
Gluyas	8,200	0	0
Stockham	8,200	0	0
Wilkins & Son	8,138	0	0
Palmer	8,113	0	0
Silke	8,100	0	0
Pittard & Son	8,042	0	0
Geen	7,875	0	0
Dunthorne	7,866	0	0
Pollard & Co.	7,800	0	0
Spiller & Son	7,747	0	0
Walters & Son	7,667	0	0
J. E. FURSLAND, Bridgwater (accepted)	7,350	0	0

CLEETHORPES (LINCS.).

For the works comprised in Contract No. 1, consisting of about 5,400 yards of sewers, varying in size from 15 in. diameter to 3 ft. 2 in. by 4 ft. 9 in., and about 380 yards of 33 in. cast-iron rising main, together with auxiliary works in connection therewith. Mr. J. S. ALFORD, M.I.C.E., engineer, 6 The Sanctuary, Westminster.

Braithwaite & Co.	£37,639	0	0
Nadin	33,175	0	0
Taylor	30,460	0	0
J. & T. Binns	30,397	0	0
Bell & Sons, Ltd.	29,993	0	0
Underwood & Bro.	29,046	0	0
Lane Bros.	28,161	0	0
Parker & Sharp	27,630	0	0
Moss & Sons, Ltd.	26,761	0	0
Cottle	26,476	0	0
Bentley & Co.	26,200	0	0
Johnson & Langley	24,908	0	0
Price & Co.	24,568	0	0
Yorkshire Hennebique Co.	22,780	0	0
ANNAKIN & Co., Harrogate (provisionally accepted)	22,348	0	0

DROITWICH.

For the new works, tanks, drains, &c., at the sewage farm, Mr. H. HULSE, borough engineer.

White, jun.	£1,913	19	7
Mason	1,718	0	0
Evered	1,665	3	9
Vale & Sons	1,360	0	0
J. & A. Brazier	1,310	5	0
Tilt Bros.	1,270	17	8
Thorpe	1,098	9	5
TRENTHAM, Handsworth (accepted)	1,010	0	0

EDINBURGH.

For the various works in connection with the erection of Tynecastle Supplementary School. Mr. J. A. CARFRAE, architect, Edinburgh.

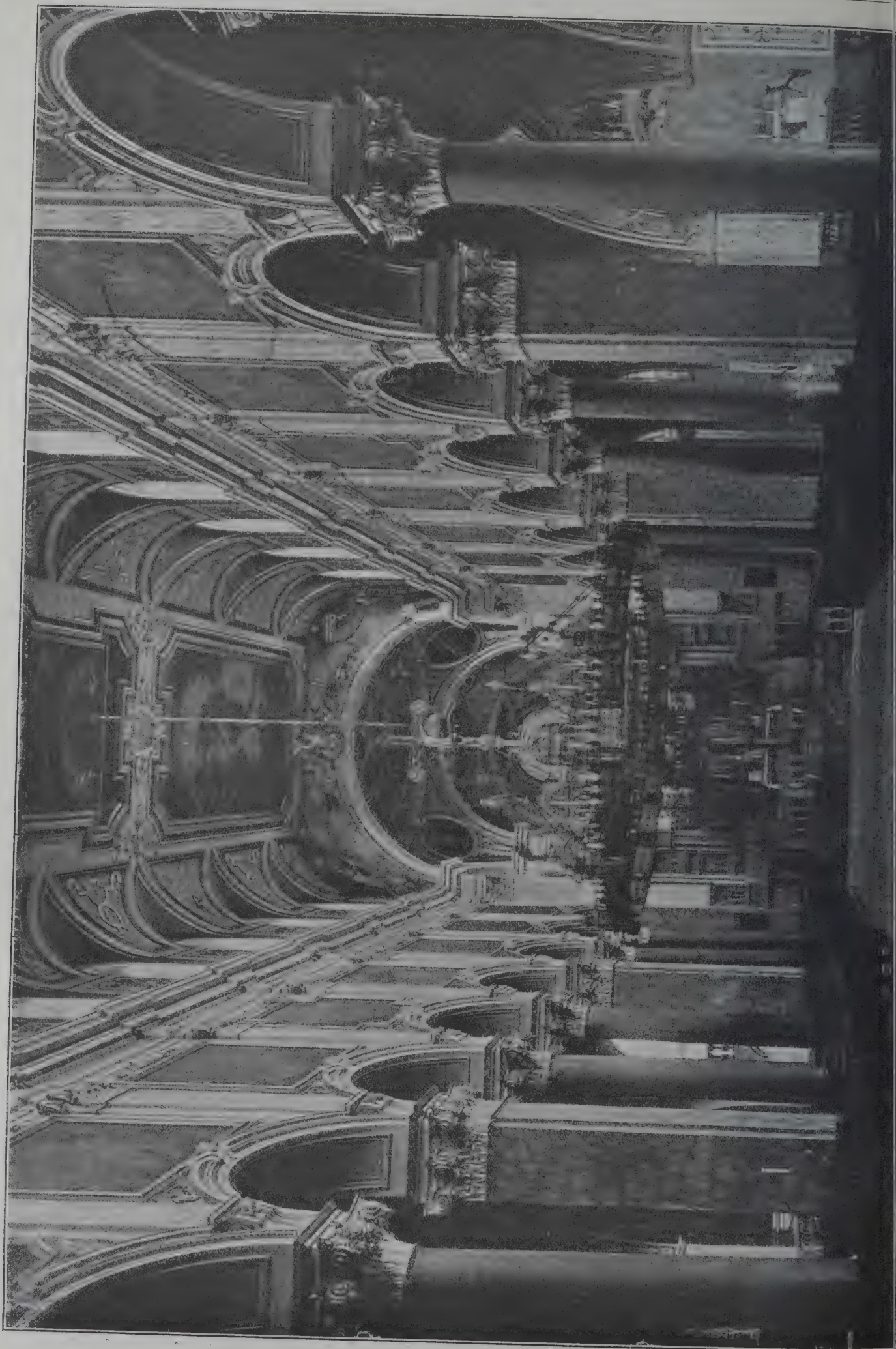
Accepted tenders.

W. Black & Sons, mason and brick work	£4,780	0	0
James Duncan & Son, carpenter, joiner, and glazier work	3,139	0	0
J. A. M'Lauchlan, plaster and concrete work	1,592	0	0
Redpath, Brown & Co., steel work	946	0	0
Steel & Wilson, plumber work	930	0	0
Alexander Taylor, slater work	403	0	0
W. L. Hendry & Co., painter work	211	0	0

HARPENDEN.

For erection of surveyor's offices, for the Urban District Council. Mr. J. H. LEVERTON, surveyor to the Council.

Coburn & Sons	£261	10	0
Salisbury & Son	256	0	0
H. & R. Hall	247	0	0
E. C. JARVIS, Harpenden (accepted)	215	0	0
Surveyor's estimate	220	0	0





REJA AT SIDE OF HIGH ALTAR, SEVILLE CATHEDRAL."—Illustration to Paper by Mr. W. BAINBRIDGE REYNOLDS.

ISLE OF WIGHT.

For the construction of a high-level landing-stage to the Royal Victoria Pier, for the Ventnor Urban District Council. Mr. H. HUGHES OAKES, engineer and surveyor, Ventnor.

Gradwell & Co.	£8,300	0	0
Fasey & Son	7,344	11	0
Griffiths & Co.	6,956	0	0
Thorne & Sons	6,497	0	0
COOPER & Co., Bristol (accepted)	5,940	0	0

LONDON.

For cleaning and (or) painting L.C.C. schools during the Easter holidays.

Accepted tenders.

Horswill—Daubeney Road, South Hackney	£488	0	0
Gathercole Brothers—The "Tooting Graveney," Wandsworth	450	0	0
F. & E. Davey—Oban Street, Poplar	437	0	0
Marchant & Hirst—Essex Street, Mile End, E.	435	0	0
Bailey—Nynehead Street, Deptford	415	0	0
Scott Fenn—Hollydale Road, Peckham.	414	15	0
Maxwell Bros.—Sellincourt Road, Wandsworth	383	0	0
Scott Fenn—Old Castle Street, Whitechapel	358	18	0
Vigor & Co.—Alton Street, Bow and Bromley	335	0	0
Stevens & Sons—Globe Road, Bethnal Green	322	0	0
Chappell—The "Pulteney," Strand	320	0	0
Gower & Son—Merton Road, Wandsworth	317	10	0
Jewell—Olga Street, Bethnal Green	315	0	0
Markham & Markham—The "Shacklewell," North Hackney	307	0	0
King & Son—Walnut Tree Walk, North Lambeth	281	0	0
Woollaston & Co.—Smith Street, Stepney	280	0	0
Lole & Co.—Winstanley Road, Battersea	271	0	0

MELTON.

For the erection of a chapel at the Suffolk County Asylum.

Sadler & Son	£3,730	0	0
Cundall	3,642	0	0
Green	3,625	0	0
Parkington & Son	3,625	0	0
Bennett	3,525	0	0
Smith	3,488	14	0
Reade	3,475	0	0
Kenney	3,472	0	0
Adams	3,452	16	0
Gayford	3,400	0	0
Hinnels & Son	3,398	0	0
Kersey	3,395	0	0
Cubitt & Gotts	3,386	0	0
MARRIOTT, Ipswich (accepted)	3,323	0	0

STONEHOUSE (GLOS.).

For the erection of a Wesleyan Methodist chapel and Sunday school. Mr. WILLIAM F. BIRD, architect, Midsomer Norton.

Simonds	£2,865	0	0
Hayward	2,680	0	0
Webb	2,599	18	0
Byard & Sons	2,559	0	0
Cooke	2,547	9	5
Chancellor & Sons	2,506	0	0
Mastin & Son	2,496	6	7
Baxter & Sons	2,466	11	4
Hayward & Wooster	2,465	0	0
Jacob, Long & Sons	2,450	0	0
Jones	2,418	0	0
Orchard & Peer	2,400	0	0
Blick	2,398	0	0
Coles Bros.	2,367	0	0
Amery	2,359	0	0
DREW, Chalford, Stroud (accepted, after revision)	2,343	0	0
Walters & Son	2,190	0	0

WALES.

For erection of two children's homes at Swansea Road, Llanelly. Mr. W. GRIFFITHS, F.S.I., architect, Llanelly.

T. & J. Brown	1,694	0	0
Mercer	1,694	0	0
Vivian	1,643	0	0
Thomas & Son	1,632	5	0
Jenkins & Sons	1,630	9	0
Phillips	1,611	10	0
Jones	1,587	0	0
J. HUGHES, Llanelly (accepted)	1,545	0	0

TRANMERE.

For the addition of a new storey to the main block, Union Workhouse, for the Birkenhead Guardians. Messrs. EDMUND KIRBY & SONS, architects, Liverpool.

Davies & Gaskell	£4,680	0	0
Milestone	4,417	0	0
Duthie & Dobson	4,370	0	0
Ellidge & Sons	4,299	15	0
Morrison & Sons	4,291	0	0
Hughes & Stirling	4,250	0	0
Fleming & Co.	4,230	0	0
Wearing & Sons	4,215	0	0
Merritt	4,198	0	0
Forde	4,096	0	0
Huxley	4,080	0	0
ROTHWELL, Birkenhead (accepted)	4,040	0	0

WEST HAM.

For the construction of a bridge at Cooks Road, Stratford, of about sixty feet span, for the Town Council. Mr. J. G. MORLEY, borough engineer, West Ham, E.

Kirk & Randall	£2,024	0	0
Myall & Upson	2,003	0	0
Coxhead	1,997	0	0
E. C. & J. Keay, Ltd.	1,944	0	0
Leslie & Co., Ltd.	1,753	0	0
Rowlingsons & Co.	1,711	0	0
Moss	1,700	0	0
Jackson	1,675	0	0
J. Strong & Co.	1,648	0	0
Garrett & Son	£1,973 and	1,598	0
Pattinson & Sons, Ltd.		1,582	0
Findlay & Co., Ltd.		1,575	0
Muirhead & Co, Ltd.		1,563	0
Elliott & Co.		1,545	0
Kavanagh & Co.	£1,997 and	1,523	0
C. Wall, Ltd.	£1,602 and	1,297	0
Braithwaite & Kirk		1,160	0

For the erection of an addition to tramway car sheds, Greengate Street, Plaistow, for the West Ham Town Council.

HORSWILL, Forest Gate (accepted) £5,855 0 0

MR. E. HOWLEY SIM, architect, has been elected Councillor of the city of Westminster.

THE estate has been sworn of the late Sir John Aird, Bart., contractor and engineer, at the amount of 1,101,489l.

MR. BENJAMIN WALMSLEY, builder and contractor of Leeds, who was also interested in the Clayton Wood Quarries, has left estate of the value of 139,730l.

THREADNEEDLE STREET Branch Post Office is to be rebuilt at an estimated cost of 18,000l.; a new sorting office is to be erected at a cost of 4,500l. at East Ham, and the cost of work at the South-Western District Office will be 17,000l.

MEMBERS and Licentiate of the Royal Institute of British Architects are requested by order of the Council not to take part in the competition for buildings for Rochdale Nurses' Home.

OWING to the complaint of the Northumberland County Council with regard to the pollution of Willow Burn, the Bedlington Urban Council have decided to carry out a sewage scheme for Netherton, Barrington, and Choppington Collieries at a cost of 8,000l.

THE contract for the first section of the National Library of Wales at Aberystwyth has been let. Ten tenders were received, and the lowest, that of Messrs. H. Willcocks & Co., Wolverhampton, at about 50,000l., was accepted. The total cost of the completed library building is estimated at over 100,000l.

THE monthly meeting of the Council of the London Master Builders' Association was held at Koh-i-Noor House, Kingsway, W.C., on the 16th inst., Mr. G. Bird Godson, president, in the chair. The quarterly financial statement was presented by the Finance Committee, and, after discussion, adopted. The various committees for the year were appointed, also the Conciliation Boards for the various trades. A proposal for affiliation from the Master Decorators was considered, and it was unanimously resolved to agree to the same, it being an important step towards unity in the trade. Various items of interest to the trade were discussed. Mr. F. J. Gorham, builder and contractor, of Point Hill, Greenwich, was elected a member of the Association. Messrs. W. Elore & Son, timber merchants, of South Lambeth Road, were elected associate members.

INSTITUTE OF BUILDERS.

THE twenty-seventh annual general meeting of the Institute of Builders was held at Koh-i-Noor House, Kingsway, W.C., on Wednesday, March 15.

The audited accounts and balance-sheets for the Institute General and Benevolent Funds for the year ending December 31, 1910, together with the report of the Council, were adopted.

The Council, in their annual report, regret that the prosperity of the country generally has not yet greatly improved the building trade.

Representatives from the Council attended several sittings of a joint conference held under the auspices of the Royal Institute of British Architects, on the subject of the proposed London County Council regulations concerning ferro-concrete construction, and the recommendations of that conference have been forwarded to the L.C.C.

At the instance of the L.C.C. Education Authority, the Council has formulated a scheme with a view to the encouragement of the formal apprenticeship of lads from elementary schools who are likely to make good mechanics. It is hoped that the suggestions made may lead to a better supply of capable workmen and tend to reduce the redundancy of unskilled labour in the future.

A committee of the Council is considering the question of the position of the principal contractor with respect to sub-contractors under the agreed form of contract, and hopes in due course to formulate proposals for alterations to the clauses bearing on the subject, which will be subsequently submitted to the Royal Institute of British Architects.

The Council regrets that the medals in brickwork and masonry which were offered at the South Kensington technological examination could not be awarded, owing to there being no entries for the practical examination in either of those trades. The carpenters' medals and money prizes, however, were duly awarded, and, in addition, a special gold medal was placed at the disposal of the Carpenters' Company in connection with their examinations in carpentry and joinery.

Gifts of books are invited from the members in order that the usefulness of the library may be extended.

The following grants were made during the past year from the I.O.B. Benevolent Fund:—(1) Builders' Benevolent Institution, 50*l.*; (2) Builders' Clerks' Benevolent Institution, 10*l.* 10*s.*; (3) Provident Institution of Builders' Foremen and Clerks of Works, 10*l.* 10*s.*; (4) Builders' Foremen's Association, 10*l.* 10*s.*

It was with deep regret that the Council learned of the death of the late J. Howard Colls, Esq., and puts on record the sense of loss that they have thereby sustained, and their appreciation of the talents and character of their late respected colleague.

The following officers, &c. were elected for the ensuing year:—

President.—Mr. James S. Holliday (Messrs. Holliday & Greenwood, Ltd.). *Vice-President*.—Mr. F. G. Rice (Messrs. Rice & Son). *Treasurer*.—Mr. Jas. Carmichael, J.P. *Hon. Auditor*.—Mr. G. C. Hudson (Messrs. Hudson Bros.).

To fill vacancies on the Executive Council.—Mr. Walter Lawrence, jun. (Messrs. Walter Lawrence & Sons), Mr. Ralph J. Holliday (Messrs. Holliday & Greenwood, Ltd.), Mr. Samuel Smethurst, J.P. (Messrs. S. & J. Smethurst, Ltd., Oldham), and Mr. Edmond J. Hill (Messrs. Higgs & Hill, Ltd.).

A very hearty vote of thanks was passed to Mr. Fredk. Higgs (Messrs. F. & H. F. Higgs), for his able and energetic discharge of the duties attached to his office of President during the last twelve months.

Votes of thanks were also given to the Treasurer (Mr. Joseph Randall) and to the Hon. Auditors (Mr. F. N. Cowlin (of Messrs. Cowlin & Son, Bristol), and Mr. Eric M. May (of Messrs. W. Cubitt & Co.).

A GENERAL assembly of the Royal Scottish Academy was held last week for the purpose of making four elections to associate rank—two painters and two architects. Sir James Guthrie, the president, occupied the chair. At the close of the proceedings the following elections were announced: Painters—Mr. J. Whitelaw Hamilton, Helensburgh, and Mr. Robert Hope, Edinburgh; runner-up—Mr. James Rid-del Colinton. Architects—Mr. William Kelly, Aberdeen, and Mr. A. N. Paterson, Glasgow; runner-up—Mr. T. Duncan Rhind, Edinburgh.

VARIETIES.

THE Ipswich Dock Commissioners have approved the principle of a scheme of dock development, the cost of carrying out which is estimated at about 200,000*l.*

MESSRS. WIDNELL & TROLLOPE, surveyors, have moved from 20 Tothill Street, S.W., to Broadway Court, Broadway, Westminster, S.W. Their new telephone number is Victoria 1923.

THE Civil Service Estimates for the year 1911-12 include particulars of the financial provision for a new Head Post Office at Bolton. The total cost is estimated at 20,480*l.*, with 1,520*l.* additional chargeable to telephone capital account, making 22,000*l.*

THE Photographic Survey and Record of Surrey will hold their annual general meeting in the Surrey Archaeological Museum, Guildford, on March 25. An exhibit of prints will be shown and will remain on view to the public for the following week.

THE Northern Architectural Association have elected the following officers: President—Mr. H. C. Charlewood; vice-president—Mr. W. Milburn; Hon. Secretary—Mr. C. S. Errington; Hon. Treasurer—Mr. R. Burns Dick; Hon. Librarian—Mr. J. Bruce.

It is understood that the governors of the High School for Girls at Bridlington are likely to proceed with the erection of a boarding-house or hostel adjoining the new school buildings erected on The Elms estate. The County Council will shortly be asked to assent to a proposal.

THE following five church-building schemes are contemplated for Sheffield: New Church for St. Timothy's, Crookes, 4,000*l.*; Mission Church for Walkley, 3,000*l.*; New Church for St. Clement's, Newhall, 3,200*l.*; New Church for St. Alban's, Darnall, 4,900*l.*; Parochial Hall, St. Timothy's, Crookes, 1,900*l.*

THE Electric Lighting Committee of Edinburgh Town Council, after considering estimates for the erection of two cooling towers at Dewar Place Power Station, agreed to recommend the acceptance of that of the Motherwell Bridge Company of a little over 18,000*l.*, which was the lowest of the nine tenders received.

A BILL has been presented with the object of securing funds to carry on extensive building operations in Belgrade. It appears that many government offices are situated in premises held on lease, and that it is now proposed to erect independent buildings for the public service. The cost of this undertaking, including the enlargement of the Servian Royal Palace, is estimated at 760,000*l.*

THE Executive Committee of the Penistone Free Library scheme have accepted plans prepared by Mr. H. B. Collins, of Barnsley. The site, which is being purchased from the Sheffield Shrewsbury Hospital Trustees, covers an area of 500 square yards, and is situate in Shrewsbury Road. The plans will be forwarded to Mr. Carnegie for his approval.

THE Imperial Trade Correspondent at Toronto reports in the *Board of Trade Journal* that a transept, with a seating capacity of 2,500, and a nave are to be added to the existing portion of St. Albans Cathedral, Toronto, at a cost estimated at 300,000 dols. (about 62,000*l.*). The architecture is to be Early English. The edifice will be cruciform with a central tower. The material to be used is white stone. The Imperial Trade Correspondent at Victoria, British Columbia, has forwarded a report of the budget speech of the Provincial Minister of Finance, from which it appears that provision is made for the expenditure of about 267,000*l.* on the construction and extension of court-houses, schools, an asylum, the Parliament buildings, &c., and of about 176,000*l.* on bridges, including 250,000 dols. for the bridge over the Second Narrows Burrard Inlet.

A CONFERENCE on practical details of town-planning administration is to be held in the National Portrait Gallery, Edinburgh, on Thursday and Friday, 30th and 31st March. The subjects to be considered include the actual details of the various steps which should be taken prior to the presentation of a formal application to the Local Government Board for Scotland for permission to prepare a town-planning scheme; the extent to which a local authority should, under a town-planning scheme, relax or alter conditions relating to widths of roads and methods of road construction; and the limitation of the number of houses per acre. The conference will be under the auspices of the National Housing and Town-Planning Council, and at the close a Town-Planning Advisory Committee for Scotland will be appointed, on similar lines to the committee already formed for England, for the purpose of stimulating the administration of the town-planning powers of the new Act in Scotland.

THE TOWN PLANNING AGITATION.

(Concluded.)

To the commonplace that architecture of the best type was produced in the good old days of uncontrolled practice we must reply that conditions have changed, and the gradual advent of commercialism, which brought the modern architect in its train, has determined the close of that golden period. Art in individual buildings under such a regime as Mr. Paul Waterhouse has proposed may suffer in those few isolated cases where their architects may be better artists than their official surveillants, but if matters are properly adjusted as the proposed machinery will render easy, the great artists in architecture should not lack complete and even better opportunities to exhibit their skill, as, for instance, the continued rejection of a common class of pot-boiling facade due to the attempt of the architect to gracefully reflect his client's ideas of design will gradually lead to more trust being placed in our profession, and a consequent rise in status of the practitioner.

The difficulties from the point of view of art are enormous, and I recall the dilemma in which a certain circle of artists were placed when met with the question of the decoration of their club. Their opinions were so much at variance that finally the matter was decided by Tottenham Court Road. Opinions on this aspect of town planning are greatly at variance in the profession; the initiators of the movement are for co-operation amongst architects, and there are even cries for a benevolent despot. The impatience of the architect to be untrammelled in the exercise of his art and the indifference of the building owner to the whole question except when conducive to effective advertisement evidently point to the conclusion that in this matter, as in all others, a compromise must be arrived at if any proposal is to take practical shape. That compromise must involve some restriction upon architects and co-operation amongst them. A general scheme for the architecture of a street must be laid down by architects in the district and duly imposed by all available means on the authorities, and the first building of artistic distinction nearest the agreed standard must be duly recognised, and form the main lines upon which the future street should be based. Adjoining structures should harmonise in mass and alignment of main lines, the general treatment and detail being left to the architect immediately concerned.

There is no doubt that the exercise of the powers of local authorities by continued pressure of architectural opinion within and without would do much to secure repression of the cult of advertisement, and new Parliamentary powers obtained to correct present deficiencies. Before the blatant advertisements disappear from our streets it is obviously necessary that architects should modify their own desires in that respect, and be contented to co-operate with their colleagues wherever the success of street architecture depends upon it.

Whilst we should repress to some extent our dominant instinct in respect of the production of ambitious design when the architecture of blocks or streets is concerned, there is every reason why we should institute a propaganda for the advertisement of good modern work amongst those who build. In this matter we are all concerned, and the lack of proper anchorage for our art in the large space in which commercial projects hold the position, necessitates an appeal on quite another plane to those who are likely to engage our services. Gothic architecture has been lectured and written to death popularly. We must now endeavour to popularise modern work, point out its object, its interest, and its beauty to the public who build, and who now have no adequate notion of the differences between good and bad work. This has been successfully done in regard to country houses, why not for the town house, the shop front, and the warehouse?

To summarise my proposals, we should first see the formation of voluntary groups of students interested in town planning, each group confining its attention to a definite area and being dominated by the local architectural society or a parent group. The work of these groups would consist in the study of local conditions and the preparation of a town plan and its popularisation locally, together with constant pressure upon the local authority within and without. The plan agreed upon to form part of any main scheme that may be considered the best by the local architectural society. The latter to endeavour to secure the local co-operation of architects, and also that of any local non-architectural societies likely to assist.

The R.I.B.A. appears at present to be somewhat in

agreement with this position generally, but the work done appears to be of a very speculative type.

The gradual evolution of a town plan by these means will necessarily prove a slow and painful process, but I think that, combined with Professor Beresford Pite's suggestion, that architects should be seated on local authorities, and, further, the possibilities of increased local powers, as Mr. Paul Waterhouse proposes, by Parliamentary action is practically certain, if strongly urged and even in the face of influential objectors. I have made no attempt to show that these proposals will result in the complete realisation of the ideal town, but I believe that only such machinery of a painfully dull and unemotional type will bring into being a tithe of the possibilities that this current phase of architecture has so eloquently placed before us.

At a general assembly of Academicians and Associates of the Royal Academy held on March 22 Mr. Alfred Parsons, A.R.A., was elected a Royal Academician.

THE Birmingham Board of Guardians have decided to erect a pathological-bacteriological building at a cost of 392*l.*, an extension of the nurses' accommodation in the infectious quarters (560*l.*), and two new infants' homes at Marston Green (3100*l.*).

MR. A. R. JEMMETT, F.R.I.B.A., began on March 17 a special course of six weekly evening lectures on "Town Planning" at the L.C.C. Westminster Technical Institute, Vincent Square, S.W. The fee for the course is two shillings and sixpence.

A FUND has been opened for raising 3000*l.*, with which to erect a new roof and other works at St. Paul's Church, Bray. Messrs. Bolton & Sons have received the contract, their tender of 2492*l.* 10*s.* being the lowest of the six received. The architect for the work is Mr. R. Caulfeild Orpen, Dublin.

THE Hull Corporation Property Committee have adopted a scheme for the demolition of the old Town Hall in Lowgate, and for its reconstruction in harmony with the adjoining new law courts and municipal offices. The work is estimated to cost between 20,000*l.* and 25,000*l.* Messrs. Russell & Cooper, architects, who prepared the successful competitive designs for the latter buildings, will prepare a detailed report on the scheme.

IN a competition limited to four architects, three being London firms, the Council of the Institution of Mechanical Engineers have selected the design of Mr. James Miller, A.R.S.A., Glasgow, for extensive additions and alterations to their institution buildings at Storey's Gate, Westminster. Mr. Miller is also architect for the new building now being erected in London for the Institution of Civil Engineers at a cost of over 100,000*l.*

At a meeting last week of the Art Gallery Committee of Aberdeen the proposed extension of the gallery was considered, with special reference to improvements to be carried out in the locality in connection with the Technical College and the erection of the King's statue. Mr. A. Marshall Mackenzie, A.R.S.A., the architect, was requested to draw up a detailed plan for the committee's consideration. Additional rooms will be constructed adjoining the Celtic Court, while upstairs there will be one large gallery to accommodate 700 people, to be utilised as a lecture-room and for large meetings. There will also be a room for arts and crafts and for exhibits from South Kensington, and for other purposes. The estimated cost of the new buildings is 9,000*l.*, and this does not include the cost of the site.

"THE MERCANTILE GUARDIAN" states that the new water works engineer at Bombay urges local architects to insist on first-class fittings and first-class plumbing. Some of our home towns might safely consider the suggestion. Our contemporary also contains the following information: The amount—23,500,000*l.*—ear-marked for broadening the gauge of the Tokio-Shimonseki line, Japan, deserves passing notice. Some 4,500,000*l.* for rolling stock, the same sum for bridges, and 3,000,000*l.* for rails, to say nothing of other expenditure, can hardly be made without creating some incidental opportunities for import business. Important water-works schemes are reported to have been approved in Argentina. In Buenos Ayres 275,000*l.* is to be spent in new mains and pipes, and foreign tenders are being invited for metal work in connection with the Caballito water supply. Both schemes are under the "Obras de Salubridad de la Nacion."

THE

Architect and Contract Reporter.

FRIDAY, MARCH 31, 1911.

Published weekly, subscription 19s. per annum for Great Britain, and for Colonial and Foreign subscriptions £1 6s. 6d. All business communications to the Managing Director,

P. A. GILBERT WOOD,

Publishing Offices, 6-11 Imperial Buildings, Ludgate Circus, London, England.

Telephone No. 4725 Holborn.

Branch Offices at 43 OLD QUEEN STREET, S.W., Messrs. W. HAY FIELDING & CO. being the representatives for all business purposes.

The Birmingham Offices are at 102 COLMORE ROW.

. Entered in the United States of America as second-class matter.

AGENTS FOR AMERICA:

The International News Co., 5 Bream's Buildings, Chancery Lane, London, England, and New York.

AGENTS FOR CANADA:

Messrs. WM. DAWSON & SONS, Ltd., 91 Church Street, Toronto, to whom all correspondence for Subscription and Advertising Rates should be made.

Subscription \$5.20.

AGENTS FOR AUSTRALIA, NEW ZEALAND AND TASMANIA:

Messrs. GORDON & GOTCH, Melbourne, Sydney, Brisbane, and Perth, Australia; Wellington, Christchurch, and Auckland, New Zealand; Launceston and Hobart, Tasmania.

SOUTH AFRICA: Central News Agency, Ltd.

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EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit the insertion of lengthy communications.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

. As great disappointment is frequently expressed at the nonappearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

ARGENTINE.—April 20.—A competition of plans for a hospital and school of medicine, to be erected at Rosario in celebration of the Argentine Centenary at a cost of about 149,000l. Prizes of 1,050l., 700l. and 440l. will be awarded. A copy of the conditions, &c., may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, London, E.C., where also a limited number of copies are available for distribution. Plans must be sent to the "Secretaría de la Comisión Pro-Hospital é Instituto de Enseñanza Médica del Centenario, Calle Córdoba 1230," Rosario.

ATHENS.—Aug. 21.—An international competition of plans is invited by the Greek Ministry of the Interior (Public Works) for the erection of a Court of Justice at Athens. The cost of the building must not exceed 160,000l. A first prize of 800l., and a second prize of 320l. will be awarded. The Greek Official Gazette, containing particulars (in Greek and in French) may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

BRADFORD.—May 1.—The Board of Management of the Bradford Infirmary invite plans with estimates for a new infirmary in Duckworth Lane. Mr. Keith D. Young, F.R.I.B.A., will act as assessor. Deposit 3l. 3s., which will be refunded on receipt of a bona-fide design or if block plan, instructions, &c., are returned within a month after receipt of replies to competitors' questions. The Secretary Superintendent of the Royal Infirmary, Bradford. (For further particulars see advertisement, January 13.)

BULGARIA.—April 30.—An international competition will be held of plans for a building which it is proposed to erect in Sofia for State and municipal offices. The following four prizes will be given, viz., 280l., 120l., 80l., and 4l. Applications must be sent to the "Kreis-Permanenz-Ausschuss," Sofia.

To Architectural Students.

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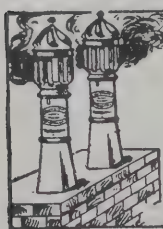
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CHESTERFIELD.—May 15.—The Standing Joint Committee for Derbyshire invite architects practising in the county to submit designs for a Court-house and lock-up to cost 8,000*l.* Mr. F. Baggallay, F.R.I.B.A., will act as assessor. Deposit 3*l.* 3*s.* Apply to Mr. G. C. Copstick, F.R.I.B.A., County Offices, Derby.

COVENTRY.—April 1.—The Corporation contemplate the erection of municipal offices in the centre of the city, and also possibly a town hall, and accordingly invite competitive designs. Mr. E. Guy Dawber, F.R.I.B.A., will act as assessor. Deposit 2*l.* 2*s.*, which will be refunded on receipt of a bona-fide design or if the particulars are returned within fourteen days of receipt. Mr. Geo. Sutton, town clerk, 10 Hay Lane, Coventry. (For further particulars see advertisement, November 18.)

CUBA.—April 15.—An international competition has been arranged for a Presidential Palace to be erected at Havana at a cost of about 205,000*l.* Premiums of 10,000 pesos and 1,000 pesos will be awarded. Conditions may be seen at the Cuban Legation, 3 Grosvenor Mansions, Victoria Street, S.W., or the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

DEVIZES.—May 10.—The Committee of the Devizes Cottage Hospital invite competitive designs for providing a new six-bed ward at, and making a general re-arrangement of, their existing hospital (16 beds) at a maximum cost of from 1,200*l.* to 1,500*l.* Deposit 10*s.* 6*d.* Conditions of competition and particulars of the buildings required will be supplied to intending competitors by Mr. E. Thorp, honorary secretary, Devizes.

ROMFORD.—The Town Planning and Modern House and Cottage Exhibition at Gidea Park, Squirrels Heath, in the Romford Garden Suburb, summer 1911. Class IV.—Town plan of Gidea Park—prizes of 100*l.* and 50*l.* Class VII.—Open to builders. For excellence of workmanship and construction in the erection of a cottage in Class I. or II.—first prize, gold medal and 100*l.*; second prize, 50*l.* Final dates for designs; Class IV., March 31, 1911. Mr. Michael Bunney, A.R.I.B.A., hon secretary, 33 Henrietta Street, Strand, W.C.

SOUTHAMPTON.—The Council of Hartley University College invite designs for the proposed new buildings. Mr. H. T. Hare, F.R.I.B.A., will act as assessor. The deposit of 1*l.* 1*s.* with the application will be returned if the conditions are returned within fourteen days. Mr. D. Kiddle, registrar, Hartley University College, Southampton.

STOCKPORT.—April 22.—Architects desirous of entering a limited competition for the designs of the Police Station and Courts which the Corporation propose to erect are invited to forward their names and addresses, with particulars of their qualifications and experience in the erection of similar buildings, on or before Saturday, April 22, to Mr. Robert Hyde, Town Clerk, Town Hall, Stockport.

WALES.—May 5.—The Corporation of Swansea invite architects to submit designs and estimates for the Castle Street improvement. Deposit 1*l.* 1*s.*, which will be refunded on receipt of a bona-fide design or if block plan and particulars are returned within a fortnight after receipt. The architect appointed to prepare the working drawings will be paid not more than 250*l.*, and a premium of 50*l.* will be paid for the second design. Mr. S. S. Reay, F.R.I.B.A., will act as assessor. Apply to the Town Clerk, Guildhall, Swansea.

CONTRACTS OPEN.

ALLITHWAITE.—For the slater and plasterer, carpenter and joiner, and plumber, glazier and painter's work for six houses, Allithwaite, Lancs. Messrs. Settle & Brundrit, A.R.I.B.A., architects, Ulverston.

BARMING HEATH.—April 1.—For proposed iron staircase and glass shelter at the Kent County Lunatic Asylum. Deposit 10*s.* 6*d.* The Engineer and Clerk of Works of the Asylum, Barming Heath, nr. Maidstone.

BRADFORD.—April 11.—For the builders' work, all trades to be let in one contract, in connection with extensions and additions to the medical officers' residence at the Workhouse, Horton Lane. Deposit 1*l.* 1*s.* Mr. Fred Holland, architect, 22 Manor Row, Bradford.

CHESTER.—April 14.—For additions and alterations to the Queen's School. Deposit 2*l.* 2*s.* Mr. P. H. Lockwood, architect, St. Werburgh Street, Chester.

CUMBERLAND.—April 1.—For the whole of the work in connection with erection and completion of a special subjects room, Longtown Council school; also for improvements to Blackbank and Rhodds Council schools. The Cumberland

Education Committee's Clerk of Works, 13 Earl Street, Carlisle.

DARLINGTON.—For building a garage off the north side of Russell Street. Mr. J. E. Chilton, architect, Bank Chambers, Darlington.

DARLINGTON.—April 4.—For erection of a laundry at the fever hospital, Yarm Road. Deposit 2*l.* 2*s.* Mr. G. Winter, borough surveyor, Town Hall, Darlington.

DEAL.—For erection of a Board room and offices for the Deal and Walmer Gas Co. Mr. C. L. Crowther, architect, Queen Street, Deal.

DIRLETON.—April 4.—For the following works in the erection of school and teacher's house, viz.: (1) Mason and brick works; (2) carpenter and joiner works; (3) slater work; (4) plaster work; (5) plumber work; (6) painter work. Mr. J. A. Carfrae, 3 Queen Street, Edinburgh.

DURHAM.—April 11.—The County Council of Durham invite sole tenders for the erection of new schools at Shiney Row (for about 820 scholars) and New Seaham (for about 450 scholars.) Mr. W. Rushworth, Shire Hall, Durham.

EAST HOWE.—April 13.—For erection of an elementary school at East Howe, Kinson, Dorset. The County Surveyor's Department, County Offices, Dorchester, and Messrs. Fletcher, Son & Brett, Wimborne.

EASTLEIGH.—April 7.—For building a drill hall, Factory Road, Eastleigh, Hants, for the Territorial Force Association. Mr. R. H. P. Bevis, architect, Elm Grove Chambers, Southsea.

FARCET.—April 12.—For erection of a Council infants' school at Farcet, Hunts. Deposit 1*l.* 1*s.* County Surveyor's Offices, 36 High Street, Huntingdon.

FAVERSHAM.—April 3.—For the following works in connection with a scheme of sewerage and sewage disposal, viz.: Contract No. 5, which comprises the construction of a sewerage pumping station and screen house, together with about 410 yards of 36 inch main outfall concrete tube sewer, and about 718 yards of 18 inch cast iron rising main, also roads, fences, and other incidental works. Deposit 5*l.* Mr. S. Percy Anderson, borough surveyor, 20 West Street, Faversham.

FRANSHAM.—April 1.—For erection of a house and stable at Fransham, Norfolk. Messrs. A. F. Scott & Son, architects and surveyors, 24 Castle Meadow, Norwich.

GAWBER.—May 5.—For the various works required in erection of six houses at Gawber, Yorks. Messrs. R. & W. Dixon, architects, 5 Eastgate, Barnsley.

GLASGOW.—April 4.—For the following works required in connection with the proposed permanent work stores, &c., in Barrland Street, viz., mason, brick, carpenter, joiner, steel and cast-iron, slater, plumber, plaster, and painter works. The whole to be let as one contract. Mr. Jas. Dalrymple, general manager, 46 Bath Street.

GOLCAR.—April 7.—For the various works required in erection of five dwelling-houses, Leymoor Road, Golcar, Yorks. Mr. J. Ainley, architect and surveyor, Chapel Street, Slaithwaite.

HALIFAX.—April 11.—For the various works required in erection of two pairs of semi-detached villa residences, &c., on the West Royd Estate, King Cross. Messrs. Medley Hall & Son, architects, 1 Harrison Road, Halifax.

HIGHAM.—May 5.—For alterations and additions to the Higham Non-Provided School, Barnsley. Messrs. R. & W. Dixon, architects, 5 Eastgate, Barnsley.

HINCKLEY.—March 31.—For erection of a factory at Hinckley. Messrs. Heaton & Walker, architects and surveyors, Hinckley.

HULL.—April 4.—For bricklayers' work (only) for erection of a coal store, &c., at the workhouse, Anlaby Road. Mr. T. B. Atkinson, architect, 11 Trinity House Lane, Hull.

IRELAND.—April 3.—For erecting 16 houses at Trim. Deposit 1*l.* Mr. P. Healy, town clerk, Town Hall, Trim.

IRELAND.—April 8.—For building boundary walls, supplying and erecting entrance gate, &c., and forming roadways through new burial ground at Robenard, near Hollymount railway station, for the Ballinrobe Rural District Council. Mr. J. Ritchie, C.E., Ballinrobe, or Mr. J. Walsh, clerk, Board Room, Ballinrobe.

IRELAND.—April 24.—For the erection of County Council Offices at Navan, Co. Meath. Deposit 1*l.* 1*s.* Mr. J. J. Inglis, architect, 5 Nassau Street, Dublin.

KEIGHLEY.—April 4.—For making an addition to the nurses' home at the Union Infirmary. Messrs. Moore & Crabtree, architects, York Chambers, Keighley.

KNEBWORTH.—April 12.—For the erection and completion of a County Council school at Knebworth (accommodation 180), Hertfordshire. Deposit 2*l.* 2*s.* Mr. Urban A. Smith, county surveyor, Hatfield.

LEEDS.—For erection of three-storey addition, alterations, new staircase, &c., to clothing factory, Dorrington Road. Send names at once (stating trade) to Mr. F. Mitchell, architect, 9 Upper Fountaine Street, Albion Street, Leeds.

LIGHTCLIFFE.—April 10.—For the mason's, joiner's, plasterer's and slater's, concretor's, plumber's and glazier's work required in erection of a house at Lightcliffe, Yorks. Messrs. Walsh & Nicholas, architects and surveyors, 10 Harrison Road, Halifax.

LITTLEHAMPTON.—April 5.—For building and completing a fire engine house in Selborne Road. Mr. H. Howard, F.S.I., surveyor, Town Offices, Littlehampton, Sussex.

LONDON.—April 6.—For cementing exterior walls to the nurses' cubicles at the infirmary, Bancroft Road, E. Mr. B. Catmur, clerk, Bancroft Road, Mile End, E.

LONDON.—April 6.—For providing additional bathing accommodation for the nurses at the Islington Infirmary, Highgate Hill, N. Deposit 2l. Apply by April 1 to Mr. E. J. Harrison, 9 Gray's Inn Square, W.C.

LONDON.—April 11.—For alterations and additions to the Electricity Works, High Street, Mortlake. Mr. G. Bruce Tomes, A.M.I.C.E., surveyor, High Street, Mortlake, S.W.

LONG SUTTON.—April 3.—For improvement works and repairs to the Corn Exchange, Long Sutton (Lincs.). Mr. W. H. H. Davis, architect, 2 York Row, Wisbech.

LUSTLEIGH.—April 8.—For the erection of a clubhouse in Town Orchard, for the Conservative Association. Mr. Glanville, Melrose Terrace, Lustleigh, Devon.

LYDD.—April 6.—For general repairs at the Lydd-Dungeness Council school, Kent. Mr. H. W. Stringer, correspondent, New Romney.

MANCHESTER.—April 5.—For erection of a dining hall, &c., at the workhouse at Crumpsall, near Manchester. Deposit 1l. 1s. Mr. A. J. Murgatroyd, architect, 23 Strutt Street, Manchester.

MANCHESTER.—April 5.—For additions and alterations to the store rooms, &c., at the Styal Cottage Homes, for the South Manchester Board of Guardians. Deposit 2l. 2s. Messrs. Charles Clegg & Son, architects, 21 Spring Gardens, Manchester.

MANCHESTER.—April 6.—For alterations and additions to cottages, William Street and Tubal Street, Ancoats, for the Midland Railway Company. The Engineer, Derby Station, M.R., Derby.

MARSDEN.—April 3.—For erection of fifty-three dwelling-houses and construction of new streets at Smithy Holme, Marsden, Yorks., for the Marsden Equitable Industrial Society, Ltd. Mr. J. Berry, architect and surveyor, 3 Market Place, Huddersfield.

MILLOM.—April 19.—For extension of the secondary school and P.T. centre, for the Education Committee of the Cumberland County Council. The Institute, Millom, or Mr. Hastwell Grayson, architect, 31 James Street, Liverpool.

MORLEY.—April 4.—For the various works required in erection of the new pavilion at the junction of High Street and South Queen Street, Morley (Yorks.). Deposit 1l. 1s. Messrs. Howorth & Howorth, architects and surveyors, Bank Chambers, Cleckheaton.

MOUSEHOLE (Cornwall).—April 8.—For the erection and completion of the proposed Council school. Mr. Sampson Hill, architect to the Cornwall Education Committee, Green Lane, Bedruth.

NEWCASTLE-UPON-TYNE.—April 3.—For providing and laying a rock asphalt floor in the transport shed, for the Town Council. The City Engineer's Office, Town Hall, Newcastle-upon-Tyne.

NEWTON ABBOT.—April 3.—For erection of market manager's house, six shops and fire station, &c., for the Urban District Council. Deposit 2l. 2s. Mr. C. D. White, surveyor, Town Hall, Newton Abbot.

NEWTON ABBOT.—April 3.—For proposed heating and alterations, &c., to the Town Hall and Courtenay Street Hall. Deposit 2l. 2s. Mr. C. D. White, Town Hall, Newton Abbot.

NORTHALLERTON.—April 1.—For erection of proposed additions, comprising science and art rooms, gymnasium, &c., at the Grammar School, for the North Riding Education Committee. Send names by April 1 to Mr. W. H. Brierley, F.S.A., 13 Lendal, York.

NORTHALLERTON.—April 4.—For carrying out additions to Northallerton Station, for the North-Eastern Railway Co. Mr. William Bell, the company's architect, York, or the Stationmaster's Office, Northallerton.

NORWICH.—April 3.—For concrete retaining wall and creosoted timber steps at Rosary Road. Deposit 5l. Mr. A. E. Collins, M.I.C.E., city engineer, Guildhall, Norwich.

NOTTINGHAM.—April 3.—For the erection of a boiler house and chimney at Burton Joyce Pumping Station, near Nottingham. Deposit 1l. 1s. Mr. F. W. Davies, water engineer, St. Peter's Churchside, Nottingham.

PLYMOUTH.—April 3.—For erection of barracks at Lambhay Green for the Devon Territorial Force Association. Deposit 2l. 2s. Mr. T. R. Kitsell, A.R.I.B.A., George Street Chambers, Plymouth.

POLLINGTON-CUM-BALNE (Yorks.).—April 6.—For addition of a vestry to the church. The Balne Vicarage, or Messrs. Thorp & Turner, architects and surveyors, Goole.

RUGBY.—April 7.—For erection of two underground transformer chambers, one in Cambridge Street and one in Manor Road. Mr. T. S. Shenton, A.M.I.E.E., manager, Electricity Department, Benn Buildings, Rugby.

ST. ALBANS.—April 14.—For erection of St. Paul's Vicarage. Deposit 2l. 2s. Messrs. Cutts, architects, 14 Southampton Street, Strand, W.C.

SCOTLAND.—April 3.—For the mason, carpenter, slater, plaster, and plumber works of a new dwelling-house to be erected in Tarves. Mr. J. Cobban, architect, Haddo House.

SCOTLAND.—April 5.—For the mason, joiner, slater, plaster, and plumber work of new post office buildings to be erected at Bo'ness. Mr. J. Thomson, architect, Bo'ness.

SCOTLAND.—April 5.—For erection of Maybole new post office, for the Commissioners of H.M. Works and Public Buildings. The Postmaster at Maypole Post Office or H.M. Office of Works, 3 Parliament Square, Edinburgh.

SCOTLAND.—April 7.—For the several works required in erection of new buildings at Taymount Terrace and Western Avenue, Perth, for the directors of the City and County of Perth Infirmary. The works for which tenders are invited consist of:—Excavator, mason and brickwork, carpenter and joiner work, slater work, plumber work, plaster and concrete work, cement and harling work, tile layer work, iron and steel work, and glazier work. Deposit 2l. 2s. Mr. James Miller, A.R.S.A., F.R.I.B.A., architect, 15 Blythswood Square, Glasgow.

SCOTLAND.—April 8.—For mason, joiner, plumber and plaster work required in connection with a new bathroom, &c., at the Fever Hospital, Kirkcaldy. Burgh Surveyor's Office, Kirkcaldy.

SCOTLAND.—April 8.—For the joiner, slater and plaster, and plumber work in the reconstruction of the old Free Church Manse, Strathfillan, Tyndrum, for the Killin School Board. Mr. T. M. Logan, architect, Tayview, Killin.

SEASCALE.—April 5.—For the plastering and cementing of a villa at Seascale, Cumberland. Mr. J. Glaister, High Church Street, Whitehaven.

SEDFIELD.—April 7.—For alterations and additions to Parish Hall, Sedfield, Durham. Mr. T. W. T. Richardson, M.S.A., architect, 57 High Street, Stockton-on-Tees.

SHILDON.—April 4.—For erection of an institute at Shildon, for the North-Eastern Railway Co. Mr. William Bell, the company's architect, York, or the Station Master's Office, Bank Top, Darlington.

STROUD.—April 18.—For the provision and erection of a refuse destructor and other works connected therewith. Deposit 1l. 1s. Mr. G. P. Milnes, A.M.I.C.E., engineer, Stroud.

SWINDON.—April 4.—For the enlargement of Swindon Head Post Office. The Postmaster, Swindon, and H.M. Office of Works, Storey's Gate, London, S.W.

TRURO.—April 3.—For erection of 17 artisans' dwellings on land at Waterloo. Mr. F. A. Barnes, A.M.I.C.E., city engineer and surveyor, Municipal Buildings, Truro.

TODMORDEN.—April 4.—For the various works required in erection of bakery, stables, &c., at Gauxholme. Mr. Thos. H. Mitchell, architect, Water Street, Todmorden.

WADSWORTH.—April 7.—For the various works required in erection of twelve houses, Billy Lane. Messrs. Sutcliffe & Sutcliffe, F.S.I., architects, New Road, Hebden Bridge.

WAKEFIELD.—April 8.—For the various works required in erection of a public elementary school in Lawefield Lane. Send names to Mr. P. Glover, secretary, Education Department, Town Hall, Wakefield, by April 8, accompanied by a deposit of 1l. 1s. for each trade, or 3l. 3s. for a complete set of quantities. Messrs. Watson, Son & Ellison, architects, Barstow Square, Wakefield.

WALES.—For erection of two shops at Penygroes, Carmarthenshire. Mr. Thomas, Penygroes, Llandebie.

WALES.—For carrying out alterations to Whitechurch Wesleyan Chapel, Cardiff. Send names and 2l. 2s. deposit to Mr. H. Budgen, F.R.I.B.A., architect, 95 St. Mary Street, Cardiff.

WALES.—April 3.—For erection of a grocer's shop at Victoria Road, Kenfig Hill. Mr. A. T. James, architect and surveyor, Bisley House, Pyle, near Bridgend.

WALES.—April 3.—For carrying out works required to complete the erection of a caretaker's house, workshops, stores, stables, cartsheds, mortuary, &c., at Gilfach, near Bargoed. Mr. J. P. Jones, F.I.S.E., the Gellygaer Urban District Council Offices, Hengoed, via Cardiff.

WALES.—April 10.—For works of improvements and alterations to the Rhiwhiriaeth Council school, Montgomeryshire. Deposit 11. 1s. Mr. L. Phillips, clerk, County Education Offices, Newtown.

WALES.—April 12.—For the re-erection of central part (girls' department) of Penydarren old schools after recent fire, for the Merthyr Tydfil Education Committee. Mr. J. Llewellyn Smith, M.S.A., architect, Aberdare.

WALES.—April 22.—For erection of a fire station and offices in Bishop's Road, Whitechurch, near Cardiff. Deposit 11. 1s. Mr. C. H. Kempthorne, architect and surveyor, 24 High Street, Cardiff.

WREXHAM.—April 4.—For alterations and additions at Wrexham Station, for the Great Western Railway Co. The engineer at Shrewsbury Station.

WEDNESBURY.—For erection of a commemoration clock tower, Market Place. Mr. E. M. Scott, borough surveyor, Wednesbury.

WENSLEYDALE.—For the various works in alterations and additions to Heather Cottage, Aysgarth, Wensleydale, Yorks. Mr. W. A. Mackinnell, architect, Maxwelltown, Dumfries, or Mr. F. S. Graham, Aysgarth.

TENDERS.

CARSHALTON.

For erection of steel-framed greenhouse and potting-shed at the children's infirmary, Carshalton, Surrey, for Metropolitan Asylums Board. Mr. W. T. HATCH, M.Inst.C.E., M.I.Mech.E., engineer-in-chief.

Skinner, Board & Co.	£226	0	0
Wrinch & Sons	200	0	0
Hampton	195	4	1
Wenham & Walters	191	0	0
Honour	186	10	0
Smith & Co.	185	0	0
GENERAL IRON FOUNDRY Co., Upper Thames Street, E.C. (accepted)	153	7	6

DOVER.

For the erection of a Picture Palace at Biggin Street. Mr. A. H. STEELE, architect, Dover.

Paramors, Ltd.	£6,795	0	0
Parsons	6,374	0	0
Austen & Lewis	6,226	0	0
Wallis	6,140	0	0
Woodhall	5,950	0	0
Denne & Son	5,876	0	0
HAYWARD & PARAMOR (accepted)	5,609	0	0
Lewis & Sons (withdrawn)	5,227	0	0

GRIMSBY.

For the construction of additional police cells at town hall, Mr. H. G. WHYATT, A.M.I.C.E., borough engineer and surveyor.

Rands & Lindup	£2,687	6	0
Hipkin	2,390	0	0
Edwards & Raynor	2,310	0	0
Richardson	2,265	10	0
Gilbert	2,265	0	0
Hewins & Goodhand	2,255	0	0
Kirton	2,255	0	0
Borrill & Cheesman	2,195	8	3
SWABY & WALSHAM, Grimsby (accepted)	2,163	5	6

HERON CROSS.

For erection of new infant school at Heron Cross, Fenton, Staffs., for the Stoke-on-Trent Education Committee.

Meiklejohn	£3,885	0	0
Willcock & Co.	3,861	17	6
Grants	3,677	0	0
Young & Son	3,567	0	0
Godwin	3,500	0	0
Tompkinson & Betteley	3,462	10	0
Wilton	3,430	0	0
Robinson & Cope	3,387	6	0
Chatfield	3,350	0	0
BALL & ROBINSON, Stoke (accepted)	3,320	0	0

HINCKLEY.

For the erection of additions to Sketchley Dye Works. Mr. W. T. GREWCOCK, A.R.I.B.A., architect, Leicester.

Herbert & Sons	£2,409	0	0
Greaves	2,175	18	0
Flavell	2,170	0	0
Chapman	2,136	0	0
Jeffcote	2,086	16	0
BENTLEY & Co., Leicester (accepted)	2,071	15	0

LONDON.

For alterations at Victoria Park Police Station. Mr. J. DIXON BUTLER, F.R.I.B.A., Surveyor to the Metropolitan Police District, New Scotland Yard, S.W.

Sabey & Son	£1,969	0	0
Harris & Wardrop	1,790	0	0
Todd & Newman	1,759	0	0
Jarvis & Sons	1,720	0	0
Grover & Son	1,694	0	0
Lawrence & Son	1,674	0	0
Fairhead & Son	1,584	0	0
Newby & Bros.	1,542	0	0
Godson & Son	1,524	0	0
Eyre	1,507	0	0
Willmott & Sons	1,488	0	0
Maddison	1,485	0	0

For alterations at Wandsworth Police Station. Mr. J. DIXON BUTLER, F.R.I.B.A., Surveyor to the Metropolitan Police District, New Scotland Yard, S.W.

Holloway Bros. (London)	£2,285	0	0
Ansell	2,280	0	0
Lorden & Son	2,217	0	0
Rice & Son	2,199	0	0
Mowlem & Co.	2,192	0	0
F. & H. F. Higgs	2,176	0	0
Minter	2,168	0	0
Grover & Son	2,079	0	0
Lathey Bros.	2,077	0	0
Prestige & Co., Ltd.	2,025	0	0
Eyre	1,918	0	0
Adamson & Sons	1,884	0	0

For the supply of woodworking shop accessories for the second section of the central car repair depôt, for the L.C.C.

Pollock & Macnab	£243	5	0
Buck & Hickman	216	12	6
Robinson & Son, Rochdale (recommended)	142	13	7
Ransome & Co.	117	6	5
Sagar & Co.	70	17	6
Estimate of chief officer of tramways	160	0	0

For the execution of the roadwork and platelaying, exclusive of the supply of rails and special trackwork, in connection with the construction, on the overhead trolley system of electric traction, of the authorised tramways from Putney Bridge, via High Street, Putney, and Putney Bridge Road to High Street, Wandsworth.

	A.	B.	Total.
Trentham	£27,046	£8,181	£35,228
Underwood and Bro.	21,660	5,443	27,104
Coles	20,729	5,821	26,550
Dick, Kerr & Co.	20,489	6,036	26,525
Kirk & Randall	20,560	5,938	26,499
Mowlem & Co.	20,798	5,637	26,435
Wimpey & Co., Hammer-smith, W. (recommended)	20,519	5,889	26,409
A. Tramways works.		B. Paving works.	

The chief engineer's estimates are £20,877 5s. 2d. for the tramway works and £6,263 12s. 2d. for the paving works, a total of £27,140 17s. 4d.

MIDDLETON.

For making-up Holland Street, Grey Street, Sarah Street, and Leates Street. Mr. W. WELBURN, Borough Surveyor.

North of England Asphalte Co.	£2,577	11	1
Fitton	2,101	11	1
Partington & Son	1,698	3	7
HEARD, Middleton Junction (accepted)	1,665	5	2

TIDWORTH.

For erection of a new garrison church.

Leslie & Co.	£4,568	0	0
Wort & Way	4,357	0	0
Crockerell	4,347	0	0
Snuggs	4,084	0	0
Chivers & Sons	3,817	0	0
GRACE & SONS, Ludgershall (accepted)	3,768	0	0



TOP OF CARD TABLE IN OAK AND PINE, BURR WALNUT, SYCAMORE, &c.
Dutch Eighteenth-century Work from Roehampton House.

STOCKINGFORD.

For erection of infant Council school at Stockingford, Nuneaton. Mr. HARRY QUICK, architect, Nuneaton.

Wincott	£10,993	0	0
Sharp	10,507	4	0
Faulks	10,185	0	0
Hickman	9,965	10	2
T. Smith	9,872	8	0
G. E. & W. Wincott	9,793	13	2
Kelly & Son	9,541	1	2
Smith & Sons	9,483	18	2

WALES.

For rebuilding of No. 97 High Street, Merthyr. Mr. C. M. DAVIES, architect, Merthyr Tydfil.

Moss	£917	0	0
Jenkins Bros.	889	0	0
Sullivan	886	9	0
R. LLOYD, Merthyr (accepted)	787	10	0

For large additions and alterations to the Morriston Council School, Neath Road, Morriston, for the Education Committee. Mr. G. E. T. LAURENCE, A.R.I.B.A., London.
Quantities by W. H. BARBER & SON, London.

Thomas & Jones	£14,645	11	0
Williams & Son	12,307	12	5
Bloxham	12,000	0	0
Dawson & Jones	11,399	12	0
Moon	10,797	0	0
Mercer	10,700	0	0
Pye, Parkinson & Co.	10,265	0	0
Davies	9,900	0	0
Stephens, Eastow & Co.	9,789	0	0
Davies & Son	9,584	0	0
J. & F. WEAVER, Swansea (accepted)	8,950	0	0

For erection of a block of office buildings in West Bute Street, Cardiff Docks. Mr. H. BUDGEN, F.R.I.B.A., architect, Cardiff.

Williams	£16,714	0	0
Shepton & Sons	16,204	0	0
Symonds & Sons	16,150	0	0
Blake	16,000	0	0
Stephens, Bastow & Co.	15,764	0	0
Knox & Wells	15,687	0	0
Davies & Howells	15,623	0	0
Gibson	15,344	0	0
Allan	15,100	0	0
Evans & Bros.	14,990	0	0
Beames	14,983	10	0
Davies & Sons	14,890	0	0
Wilkins & Sons	14,679	0	0
Thomas & Co.	14,631	0	0
Turner & Sons	14,518	0	0
W. T. MORGAN, Cardiff (accepted)	14,286	0	0

INTERNATIONAL HEATING AND VENTILATING CONGRESS AT DRESDEN.

AN International Heating and Ventilating Congress will be held at Dresden from the 12th to 14th June this year.

It is hoped that this year's congress at Dresden will meet with widespread interest abroad, and that even a larger number of foreign representatives will attend than on previous occasions.

Apart from the congress itself with its scientific lectures and social functions, Dresden, one of the finest and most beautiful cities, will be a particular centre of attraction. Indeed, a visit to this town should prove of special interest to engineers, as from May to October an International Exhibition on Hygiene is being held, which in size and importance surpasses all previous exhibitions of its kind. At the same time a special exhibition, on a large scale, of heating and ventilating appliances will claim the attention of the visitors to this congress. This last named exhibition not only combines everything that is used in regard to appliances and apparatus for heating and ventilation, but offers, moreover, a historical view of the development of heating and ventilation up to the present day.

The Managing Committee of the Congress has arranged for foreign visitors to be shown round the exhibition by guides familiar with the subject matter and the various languages, who will not only be at their disposal during the course of a number of scientific lectures, and inspection of some heating plants, but also during the social functions.

The programme commences on Sunday, June 11th, with an evening reception in the hall of the Exhibition Palace.

Monday, June 12.—Forenoon: First meeting in the aula of the Royal Technical High School, Dresden. Afternoon: Inspection of heating and ventilating plants in the following buildings: Municipal Offices (Staendehaus), County Court and Prison, Town Hall, Slaughter House. Evening: Official dinner in the hall of the Exhibition Palace.

Tuesday, June 13.—Forenoon: Second meeting in the auditorium of the International Hygiene Exhibition. Report on the exhibition itself, and on the scientific section of the exhibition, ventilating, heating, and collective exhibition of the Union of German Central Heating Engineers. Inspection of the exhibition under the guidance of experts.

Wednesday, June 14.—Forenoon: Third meeting in the aula of the Royal Technical High School, Dresden. Afternoon: Inspection of heating and ventilating plants. Evening: Performance at the Royal Opera House.

The following lectures will be given: (1) Far distance heating; (2) Heating of Schools; (3) Hot Water Supply Plants; (4) Historical development of the science of heating; (5) Report on the Hygiene Exhibition at Dresden in 1911, and on the special exhibition of heating and ventilating appliances.



ADAPTATION OF NATURAL FORMS IN INTARSIA.—From S. Maria in Organo.

THE CONCRETE INSTITUTE.

THE next ordinary general meeting of the Concrete Institute will be held at Denison House, 296 Vauxhall Bridge Road, Westminster (close to Victoria Station), on Thursday, April 13, at 8 P.M., Sir Henry Tanner, I.S.O., F.R.I.E.A., presiding, when Mr. C. Percy Taylor will read a paper entitled "The Reinforced Concrete Pier at Swanscombe," to be illustrated by lantern slides. The offices of the Concrete Institute will be removed after March 25 from 8 Waterloo Place, S.W., to Denison House, 296 Vauxhall Bridge Road, Westminster, S.W. The new offices will be more accessible to the majority of members and will give increased accommodation. A library and reading-room will be formed for the general use of the members. The new telephone number is 2112 Victoria.

The rules of the Concrete Institute were recently altered so as to enable a Students' Section to be established in fulfilment of one of the chief objects of the Institute, namely, to advance the knowledge of concrete and reinforced concrete and their constituents, and to direct attention to the uses to which these materials can be best applied. In further extension of this policy a course of educational lectures on the subject of "Reinforced Concrete" is being arranged for students and the public; these will be given on six consecutive Wednesdays, commencing April 26, at 5.45 P.M., and occupying approximately one hour, the lecturer being Mr. R. W. Lawdrey, B.A., Assoc. M. Inst. C.E., M.C.I. Admission will be free, by ticket, obtainable on application to the Secretary.

The Concrete Institute has made progress during the last year, its membership having increased by fifty-five. It has reported on a number of technical subjects, and it has been consulted on various matters by public authorities, societies and others.

THE Glasgow Corporation recently invited plans for a branch library at the corner of Saracen Street and Allander Street, Possilpark, and in reply received 127 designs. The design submitted by Mr. George Simpson, Glasgow, was awarded first place, and that architect will carry out the work. Premiums of 50l. and 25l. were awarded to Mr. W. B. Whitie (Glasgow) and Mr. T. S. Allan (Rutherglen) respectively.

LONDON ASSOCIATION OF MASTER STONEMASONS.

THE first annual meeting of the London Association of Master Stonemasons was held at the Cannon Street Hotel, E.C., on Wednesday, March 15, when the following were present: Mr. Fred. Corben (who occupied the chair in the absence owing to Parliamentary duties of the president, Mr. Stephen Collins, M.P.), Messrs. C. W. Courtenay, J.P., Corben, junior, F. J. Barnes, E. E. Way, Walter Pangbourne (Bath Stone Firms, Ltd.), J. Beckley (Messrs. Geo. Wimpey & Co.), W. H. Johnson, J. Bysouth, Morris (Yockney & Hartham Parkstone Co., Ltd.), Frank Mortimer, W. Gibbons, E. J. Fox, Frank Collins (Stephen Collins, Ltd.), Walter Bryant (United Stone Firms, Ltd.), Walpole Collins (hon. sec.). Mr. Walter Pangbourne (hon. auditor) presented his report, showing a satisfactory balance in hand.

Mr. Stephen Collins, M.P., on completing his year of office as president, was unanimously and most cordially thanked for his services, as it was felt that it was largely owing to his initiative that the Association was started and had flourished so well.

Mr. Fred. Corben was unanimously elected president for the ensuing year, and Mr. Stephen Collins, M.P., and Mr. C. W. Courtenay, J.P., as vice-presidents. The following were elected to serve on the Committee:—Messrs. Walter Pangbourne, Ernest E. Way, Frank Mortimer, J. Beckley, Geo. Calvert, W. H. Johnson, and Mr. Walpole Collins, hon. secretary and treasurer.

INCORPORATED SOCIETY FOR PROMOTING THE ENLARGEMENT, BUILDING, AND REPAIRING OF CHURCHES AND CHAPELS.

THIS Society held its usual monthly meeting on Thursday, the 16th inst., at the Society's House, 7 Dean's Yard, Westminster Abbey, S.W., the Reverend Canon C. F. Norman in the chair. There were also present:—Viscount Dunluce, the Reverends Canon Arnott, the Master of Magdalene College, Cambridge, Canon Edgar Sheppard, C.V.O., D.D., and A. G. Ingram; Lieutenant-Colonel the Hon. G.

H. W. Windsor-Clive, Messrs. George Cowell, F.R.C.S., J. E. Ollivant, Lewis Wigram, and the Reverend T. T. Norgate, F.R.G.S., F.R.Hist.S., Secretary.

Grants of money were made in aid of the following objects, viz.:—Building new Churches at Newtown, Tisbury, Wilts, £50; Westcliff-on-Sea, S. Saviour, Essex, £100 for the first portion, and Weston-super-Mare, S. Paul, Som., £150; rebuilding the Churches at Birmingham, S. Stephen, £200; and Taplow, S. Nicholas, Bucks, £150; and towards enlarging or otherwise improving the accommodation in the Churches at Maindee, S. John-the-Evangelist, Mon., £100; Tibshelf, S. John-the-Baptist, Derbyshire, £40; and Winchelsea, S. Thomas, Sussex, £55. Grants were also made from the Special Mission Buildings Fund towards building Mission Churches at Borth-y-Gest, Portmadoc, N. Wales, £30; and Edmonton, S. John, Middlesex, £40. The following grants were also paid for works completed:—Purlwell, S. Andrew, Yorks., £200; Ben Rhydding, S. John, Yorks., £25; Walton-on-the-Hill, S. Luke, Liverpool, £10; Scopwick, Holy Cross, Lincoln, £25; Mitcham, S. Mark, Surrey, £145; South Tottenham, S. Philip, Middlesex, £100; Starbeck, S. Andrew, near Harrogate, £100; Greenfield, Holy Trinity, near Holywell, N. Wales, £20; Sneinton, S. Christopher, near Nottingham, £100; Ilkeston, S. Mary, Derbyshire, £70; East Ham, S. Bartholomew, Essex, £250, being balance of a grant of £1,000; and Carlton Vale Mission Church, Kilburn, Middlesex, £25. In addition to this the sum of £510 was paid towards the repairs of twenty Churches from Trust Funds held by the Society.

It is earnestly hoped that Churchmen will come to the assistance of this venerable Society, which is entirely dependent upon voluntary contributions. The funds at the disposal of the Committee are almost exhausted by the grants voted at this meeting, and there is an increasing flow of applications for aid. The Society is doing a great work of Church extension by promoting the building and repairing of Churches upon right lines.

The annual General Court of the Society will be held at the Church House on Thursday, May 18, at 3 P.M., when the Bishop of Salisbury has kindly consented to take the chair. The other speakers will be the Bishops of S. Davids and Colchester, Lord Aberdare, Charles Spooner, Esq., F.R.I.B.A., and the Rev. P. S. G. Propert, Vicar of S. Augustine's, Fulham, and Chairman of the Fulham Board of Guardians.

PRESERVATION OF NATIONAL MONUMENTS IN IRELAND.

In the seventy-eighth annual report of the Commissioners of Public Works in Ireland an appendix is given showing the works carried out on National and Ancient Monuments under the Irish Church Act, 1869; Ancient Monuments Protection Act, 1882; and Ancient Monuments Protection Act, 1892.

Works of protection and repair have been carried out at twenty-six buildings, or groups of buildings, with funds provided under the Irish Church Act, and at sixteen structures, or groups of structures, with funds provided under the Ancient Monuments Acts, 1882 and 1892.

1. Funds provided under the Irish Church Act, 1869, were expended on the following:—Ruins on the Rock of Cashel, co. Tipperary; the Seven Churches, Glendalough, co. Dublin; the churches, crosses, and round tower, Monasterboice; St. Columba's stone-roofed house, Kells, co. Meath; Timoleague Franciscan Church and Convent, co. Cork; Skreen Church and Tower, co. Meath; Roscrea Round Tower and Church, co. Tipperary; Donaghmore Church, co. Tipperary; St. Bridget's Monastery, Clare Island, co. Mayo; Rattoo Church and Round Tower, co. Kerry; Fenagh Abbey, co. Leitrim; Franciscan Church and Convent, Ross, co. Galway; the Cistercian Abbey of Holycross, co. Tipperary; the Augustinian Priory of Athassel, co. Tipperary; the Cistercian Abbey of Mellifont, co. Louth; the Monastery, Cathedral Church, and St. Peter's Church, Ferns, co. Wexford; the Cistercian Abbey of Jerpoint, co. Kilkenny; Titeskin Church, co. Cork; St. Molaga's Church, co. Cork; Clones Cross, co. Monaghan; Drumlane Church and Round Tower, co. Cavan; St. Kieran's Church, Clear Island, co. Cork; the Tower and Choir of the Franciscan Church of St. Francis, co. Kilkenny; the Church of Kilmalkedar, co. Kerry; the Ogam stone circle of Ballintaggart, co. Kerry; the Franciscan Church and Convent, Kilcrea, co. Cork.

2. Funds provided under the Ancient Monuments Acts, 1882 and 1892 were expended on:—The Cistercian Abbey of

Mellifont, co. Louth; the "Giant's Ring," Ballyleson, co. Down; Sherkin Franciscan Friary, co. Cork; Staigue Fort, co. Kerry; the Ancient Monuments on the Promontory, Dingle, co. Kerry; the Grianan of Aileach, co. Donegal; the Cistercian Abbey of Dunbrody, co. Wexford; Kilcrea Franciscan Friary, co. Cork; Buttevant Franciscan Friary, co. Cork; Inniskeen Round Tower, co. Monaghan; Trim Yellow Steeple, co. Meath; Donegal Castle, co. Donegal; Donegal Franciscan Friary, co. Donegal; Franciscan Friary, Ennis, co. Clare; Killone Abbey, co. Clare.

Timoleague Franciscan House was illustrated and described in the Board's report for last year, and the repair then commenced were this year carried through to completion. Considerable difficulty is experienced here with the promiscuous interments which take place in the absence of any burial regulations. The area within the walls regarded merely as a desirable burying ground not alone for the locality, but for persons from a distance. The courtyard, in which there were no burials in 1878, is now overcrowded.

At the tower of Skreen Church in County Meath, which is much resorted to an account of the extensive view to be obtained from its summit, the floors and stairs have been strengthened and protected to avoid possible accidents.

The Augustinian Priory of Athassel, County Tipperary at which initial repairs had been executed in 1882, has become dangerously overgrown with vegetation. The ivy was removed from the walls, and some large trees with overhanging branches had to be cut down; considerable repair were found to be necessary to make good the ravages of the ivy, and a general clearing up of the area within the wall was attempted. The presence of a large number of graves, some of them within the walls where the stone-vaulted roof still remains, makes it difficult to maintain the precinct with an aspect of decency.

At Kilcrea Friary, County Cork, extensive repairs were carried on and completed during the present year. At the instance of the Inspector of Ancient Monuments the local clergyman has succeeded in getting the Rural District Council to appoint a caretaker to control the burials, the Board of Works supplementing his salary by an equal amount to look after the ruins. It has also been arranged that burials are to be confined to those in the ecclesiastical union of parishes having burial rights within the walls, and that the unauthorised burials of unknown persons coming from a distance are to be discouraged. Efforts towards similar satisfactory arrangements are being made at other ruins under the Board's care.

The repairs commenced at Mellifont Abbey during the year 1908-09 were carried on and completed, including the enclosing of the additional space vested in the Board. The cutstone work of the foundations of the piers and abutment of the nave and choir is of sandstone of a friable nature, and requires treatment with a baryta solution to prevent it from crumbling away.

In the interior of the Tumulus of Dowth, County Meath some of the supporting stones showed signs of disintegration and it became necessary to introduce reinforced concrete to maintain them in position.

The repairs at the Franciscan Friary at Sherkin Island were completed. The grave spaces in the interior have been cleaned up. The area of the cloister garth is at present free from graves, and it is intended to preserve this portion from being used for burial purposes.

The repairs at Franciscan Church at Buttevant, County Cork, have been completed. The walls have been preserved by concreting the top and pointing the faces where the open joints were injured by the ivy. Owing to the overcrowding of the interior with grave mounds, headstones, tombs, &c., but little could be done to improve the neglected aspect of the interior of this ruin.

At Inniskeen Round Tower, County Monaghan, recently vested in the Board, preliminary repairs have been carried out. Vegetation has been removed, and some pointing done to secure and preserve the walls. A wooden rail has been placed around the base of the Tower to prevent injury to the foundations by the digging of graves.

The "Yellow Steeple" at Trim, which is all that is left of the Church of St. Mary, is in need of repair. As a precaution against danger from falling stones a railing has been erected around its base. Owing to its great height and the cost of scaffolding the tops of the walls were not secured when the initial repairs were undertaken, but as the matter has now become urgent the work will be commenced during the coming year.

Ancient Monuments under the Irish Land Act, 1903 Section 14.—During the past year the Estates Commissioner

have offered for vesting under the above Act the following twelve structures:—

Togher Castle, co. Cork; Cregnaakeerogue Fort and Basinstone, &c., co. Clare; Relaghbeg Fort, co. Cavan; Killusty Castle, co. Tipperary; Kinnafad Castle, co. Kildare; Callas Fort, co. Cork; Cullahill Castle, Queen's County; Inchbofin Abbey, co. Westmeath; Laughanstown (Tully) Crosses, co. Dublin; Longstone Rath and Standing Stone, co. Tipperary; St. Connell's Cross, co. Donegal; Ballynoran Castle, co. Tipperary.

Out of this number the following three have been accepted:—

1. Cregnaakeerogue Fort, Basinstone, &c., co. Clare.—In addition to the Fort and Basinstone, there are two standing stones and a cairn, the whole forming a most interesting group of monuments.

The "Fort" is an earthen mound of considerable extent, evidently intended for ceremonial purposes, and was the inauguration place of the Dalcassian Princes, known as the Mound of Magh Adhair. It is flat topped—the level portion measuring 105 feet by 83 feet, and is 20 feet in height, surrounded by a fosse. It has an approach sloping upwards from a cairn on the west side. The Basinstone is on the north side of the Mound. It is a conglomerate boulder with a depression in its upper surface, and has two pear-shaped sinkings, the larger about 6 inches deep. The Mound is mentioned as early as A.D. 981 and A.D. 1051 in the "Annals of the Four Masters." In the thirteenth century Brian, son of King Conor, was inaugurated here by Sioda MacNamara, the Hereditary Marshal. It is described as the place "where the kings of Thomond were made."

2. Laughanstown (Tully) Crosses, co. Dublin.—These crosses are near the ruined church of Tully—one standing on the public road and the other in the field adjoining. They are the remains of an important ecclesiastical foundation dating from the time of St. Bridget. The original name of Tully in Irish is Tulach-na-nespuc, or Tulach-na-h-easbog, meaning the Hill of the Bishops. There are the bases of two other crosses and two cairns included in the vesting, and the Board are in treaty with the Rural District Council of Rathdown No. 1 for vesting the remains of the primitive church in the adjoining graveyard of Tully.

3. Inchbofin Abbey and Church, co. Westmeath.—These ruins are situated on an island of that name in Lough Ree adjoining the Westmeath shore, to which county it belongs. The island is associated with the name of St. Riogh, a nephew of St. Patrick, who is said to have founded a monastery there. The Abbey is a small structure, consisting of nave and transept. It has a beautiful Romanesque window, and there are some remains of the domestic buildings. The church, a little distance away, is a larger structure, and has a semi-circular headed chancel, arch, and window of eleventh century date in good preservation.

The remaining nine structures offered by the Estates Commissioners, though of much local interest and worthy of preservation, seem to be more suited for the custody of the Councils of the respective counties in which they are situated.

Of the ruins offered by private individuals and bodies other than the Estates Commissioners there is only one—viz., St. Mary's Church, Gowran, co. Kilkenny, the guardianship of which has been accepted by the Board.

EXPENDITURE ON GOVERNMENT BUILDINGS IN GREAT BRITAIN.

THE Civil Service Estimates to be submitted to the House of Commons for the year ending March 31, 1912, have been published. Class I. deals with public works and buildings.

Under the heading of "Palaces not in His Majesty's Occupation" grants of 4,075*l.* and 4,040*l.* are asked in respect of new works at Hampton Court and Holyrood respectively; the former being for the erection of houses to accommodate firemen and for works necessary to safeguard against fire.

For Royal Parks and pleasure gardens it is proposed to obtain 14,493*l.* for new works, of which amount 5,290*l.* is to be expended at the Edinburgh Royal Botanic Garden, and 1,635*l.* at Regent's Park.

The gross total proposed for the Houses of Parliament buildings is 47,495*l.*, made up as follows:—(a) new works, alterations and additions, 4,335*l.*; (b) maintenance and repairs, 12,690*l.*; (c) maintenance of approaches and gardens, 2,380*l.*; (d) warming, ventilating, lighting, &c., 28,090*l.*

On County Court buildings it is proposed to expend 13,340*l.* on new works, alterations, additions and purchases, chiefly on further work at Blackburn (3,500*l.*), Bournemouth (2,000*l.*), Bury (3,000*l.*), Watford (2,170*l.*), and Wandsworth (1,000*l.*).

For Art and Science Buildings the sum of 27,470*l.* is asked for to be expended on new works, alterations, additions and purchases. The largest amounts are 12,000*l.* towards the erection of a new Spirit Building at the Natural History Museum; 5,000*l.* for the acquisition of property adjoining the Royal Scottish Museum as a protection against fire risks, and 2,600*l.* for the erection of administrative offices at the Museum; 1,300*l.* towards the cost of alterations to roof construction at the British Museum.

On new works and alterations at Customs and Excise Buildings and Inland Revenue Buildings it is proposed to spend 7,365*l.* and 17,680*l.* respectively, chiefly for small work. The largest items are 6,750*l.*, being the first portion of the amount required for erection of new offices at Bury, and 2,500*l.* for additional repositories at the Secretaries' Office, Somerset House, by roofing in areas.

On Post Office and Telegraph Buildings it is proposed to ask for 339,000*l.* for new works, alterations and additions. The works in progress in the London District for which grants are asked include the following:—Acton: new branch post office, 2,600*l.*; Blackheath: new post office, 3,215*l.*; Deptford: new sorting office, 2,305*l.*; Kilburn: sorting office enlargement, 3,440*l.*; Leytonstone: new sorting office, 2,500*l.*; Mount Pleasant: removal of returned letter office to second floor and improved accommodation for parcel sorting office, 9,100*l.*; Notting Hill: branch post office and sorting office extension, 2,360*l.*; Poplar: new branch post office, 6,145*l.*; South Eastern district office extension (estimated cost, 59,900*l.*), 14,000*l.*; South Lambeth: new sorting office, 2,320*l.*; Stoke Newington: new sorting office, 2,000*l.*; Western Central district office extension (total cost, 31,200*l.*), 14,000*l.*; Western district: parcel office enlargement, 500*l.*; Whetstone: sorting office, 1,795*l.*

In the Country.—Bacup: new post office, 2,060*l.*; Banbury: post office extension, 930*l.*; Birmingham: telegraph stores (total cost 86,470*l.*), 16,000*l.*; Birmingham, Hockley Hill: new branch office, 3,500*l.*; Bishop Auckland: new post office, 5,130*l.*; Blyth: new post office, 3,340*l.*; Bournemouth: parcel sorting office, 1,560*l.*; Bromley: post office extension, 2,020*l.*; Carnforth: post office extension, 6,600*l.*; Chester: new sorting office, 6,500*l.*; Chesterfield: post office extension, 1,475*l.*; Chislehurst: post office, 240*l.*; Crewe: station sorting office, 7,920*l.*; Devonport: post office extension, 4,335*l.*; Doncaster: new sorting office, 5,250*l.*; Eastbourne: new head post office, 7,700*l.*; Eltham: new post office, 2,200*l.*; Kidderminster: head post office enlargement, 1,250*l.*; Leamington Spa: post office extension, 4,000*l.*; Leeds: head post office enlargement, 7,000*l.*; Liverpool, Rice Lane: new sub-district office, 1,580*l.*; Llanelli: New post office, 1,220*l.*; Malton: new post office, 1,110*l.*; Mansfield: new post office, 4,420*l.*; Newcastle-on-Tyne: head post office extension, 7,000*l.*; Newcastle-on-Tyne: eastern district new branch post office and sorting office, 5,400*l.*; Newcastle, Staffs.: new post office, 3,500*l.*; Petworth: new post office, 1,545*l.*; Romford: new post office, 2,830*l.*; Smethwick: branch post office enlargement, 1,070*l.*; South Shields: head post office enlargement, 3,400*l.*; Swindon: head post office extension, 3,100*l.*; Tidworth Camp: new post office, 1,370*l.*; Torquay: new post office, 5,100*l.*; Tunbridge Wells: post office extension, 5,200*l.*; Waltham Cross: post office enlargement, 720*l.*; Weybridge: head post office, 4,220*l.*; Woking: new sorting office, 2,825*l.*; Edinburgh: general post office extension, 2,950*l.*; Helensburgh: post office extension, 560*l.*; Maybole: new post office, 2,345*l.*; Motherwell: post office extension, 600*l.*; Paisley: post office extension, 6,000*l.*; Wick: new post office, 4,860*l.*

The proposed works votes required for 1911-12, amounting to 1,000*l.* and upwards, in the London district, are as follows:—G.P.O. North: extension of kitchens and dining-room, 4,000*l.*; East Ham: new branch post office and sorting office, 1,000*l.*; South Western district office (revote, 6,000*l.*), (total cost, 18,100*l.*), 8,000*l.*; Threadneedle Street: branch post office rebuilding (total cost, 18,000*l.*), 8,000*l.*. In England and Wales they include:—Barking: new post office, 2,000*l.*; Birkenhead, Liscard: new sorting office, 2,500*l.*; Birmingham: new parcel office (estimated cost, 50,880*l.*), 7,500*l.*; Bolton: new head post office (estimated cost, 20,480*l.*), 4,000*l.*; Darlington: post office extension, 2,000*l.*; Hinckley: 1,000*l.*; Huddersfield: post office alterations and new sorting office, 2,000*l.*; Lichfield: Whittington Barracks sub-office, 1,500*l.*; Nuneaton: post office rebuilding,

1,000l.; Portsmouth: 3,000l.; Rochester: new post office, 1,500l.; Stafford: new post office, 1,500l.; Stockport: post office rebuilding, 1,000l.; Teignmouth: post office adaptation, 1,800l.; Walsall: post office enlargement, 1,000l.; Woking: post office extension, 1,025l.; Workington: new post office, 2,000l.; Glasgow: head post office extension (total estimated cost, 58,078l.), 20,000l.; Perth: new sorting office, 3,260l.

VARIETIES.

It is proposed to add to the King's School, Rochester, a large hall, a gymnasium, a swimming bath, and a fives court at a cost of 6,000l. or 7,000l.

MESSRS. J. CRAIG, BARR & COOK, architects, Paisley, have prepared plans for a new day nursery which is to be erected in Storie Street, Paisley.

THE Works Committee of Plymouth Corporation have adopted plans for the reconstruction of subsidiary sewers and the repaving of streets within the seventh district at an estimated cost of 12,665l. The existing sewers which it is proposed to reconstruct are principally composed of masonry, with tile or rock inverts, and shillet arches or cover stones, and are in a very defective condition.

THE Committee of the General Council of Aberdeen University promoting the movement for the reconstruction and restoration of Bishop Elphinstone's tomb in King's College Chapel, Aberdeen, have issued a special appeal for funds. The artist and sculptor selected for the work is Mr. Henry Wilson, and already a sum of 1,018l. has been subscribed.

At a meeting of the Swansea and Merthyr Joint Asylum Committee, it was reported that 55 applications had been received for the position of architect of the proposed asylum. The following were placed on the short list:—Mr. G. T. Hine, Westminster; Messrs. Johnson & Richards, Merthyr; and Mr. D. J. Wood, London. It was decided that the Committee should inspect the last asylum erected by each of the three selected architects.

THE Local Government Board have given authority for the preparation of two further town planning schemes, under the Housing, Town Planning, &c., Act, 1909. The schemes are to be prepared by the Corporation of Birmingham and the Urban District Council of Ruislip-Northwood. In the case of Birmingham sanction had previously been given to the preparation of a scheme in regard to over 2,300 acres in the parishes of Quinton, Harborne, Edgbaston, and Northfield, and the further scheme is to apply to an area of about 1,450 acres in the parish of Aston, on the east side of the city.

THE Town Improvement and Street Committee of the Newcastle Corporation last week had under consideration plans presented by the London Joint Stock Banking Co., Ltd., for the erection in Grey Street of bank premises in the modern Renaissance style. The committee thought that the style of the proposed building would interfere with the uniformity of the buildings in Grey Street, and it was suggested that the architect should amend the plans in relation to the proposed external appearance of the new building, so as to bring it in harmony with the other buildings in that thoroughfare.

THE Middlesbrough borough engineer last week presented to the Streets Committee his report on a plan for the laying out of a considerable area of building land on the south side of Station Road, just outside the borough boundary. The plan embodies the laying out of fourteen front streets, some 600 feet in length, and provides for the erection of 350 cottage houses. The borough engineer's suggestion that notice should be given of the scheme, and the land scheduled as an area for town planning, was adopted, and a committee was appointed to attend a conference of the parties concerned.

THE Stoke-on-Trent Education Committee have adopted the report of the Sites and Buildings Committee, in which they stated that they had very fully considered the question of the carrying out of the architectural work of the Education Committee, and recommended that an architect be advertised for at a salary of 250l. per annum to devote his whole time to the duties of the office. It was also recommended that the question of the appointment of an assistant be deferred until the appointment of an architect had been made.

THE Staffordshire Education Committee have decided to purchase 4,840 square yards of land at Chandle from Mr. William Alcock at 1s. 9d. per square yard as the site of a new Council school. It was resolved that statutory notices should be issued of the intention of the Committee to provide new Council schools at Fulford for 95 children and at Norton Canes to accommodate 300 children. It was decided that

the Rushall Council Girls' and Infants' School should be reorganised as a school for girls only, and that a new school for 220 infants should be erected.

THE New York State Capitol at Albany was partly destroyed by fire on Wednesday last. The damage is estimated by the State Architect to be five million dollars, irrespective of the burnt documents in the library. The building was begun in 1869, and the estimated cost was 800,000l. Up to the present no less than 5,200,000l. have been expended on the building.

THE Humber Conservancy Board are considering an important scheme for the improvement of the River Humber from the junction of the Ouse and Trent down to Paull Bight, the object being the training of the ebb and flood streams of the Ouse and Trent into the Humber at such an angle that the combined discharges may be trained to follow the same channel. This involves the construction of three half-tide training walls in the Humber from Flaxfleet Ness, five miles in length, at a cost of 90,000l.; a second in the Trent from Island House to Trent Falls, about one and three-quarter miles, costing 25,000l.; and a third in the Ouse, from Ousefleet Ness to Trent Falls, about two and a quarter miles, at a cost of 17,000l. Other works would also be necessary. The Board has appointed Sir M. B. Williams, K.C.M.G., in conjunction with Mr. S. N. Abernethy, to act as consulting engineers.

THE Glasgow Dean of Guild Court last week granted linings for all the buildings within the grounds of the Scottish National Exhibition at Kelvingrove on condition that an inspector be appointed by the Court, and that he report to the Court before the buildings are used by the public. The following linings were also granted:—Maryhill Bowling Club, to take down existing clubhouse and erect a new one in Watt Street, Maryhill; Messrs. Percy & Halden (Limited), oil merchants, 54 Great Wellington Street, Kinning Park, to erect additions to their works; the Rev. A. J. Maguire, to erect schools in East Rose Street and Henrietta Street; the Savoy Theatre, Glasgow (Limited), 36 St Vincent Street, to erect a theatre at the corner of Hope Street and Renfrew Street; the Glasgow Olympia Theatre of Varieties (Limited), 116 Hope Street, to erect a theatre at 1-9 Charles Street and 2-16 Orr Street, Bridgeton.

THE famous Kentish cromlech known as "Kits Coty House," Aylesford, supposed to be of greater antiquity than Stonehenge, and to have been erected not later than 1,800 or 2,000 years before Christ, is to be sold by auction, with the freehold building land, by Messrs. Hampton & Sons, on Tuesday, April 11. Several historians speak of this monument as being the burial-place of "Catigern," the British Prince who was slain in single combat with Horsa in a battle between the Britons and Saxons, A.D. 455, when the Britons were victorious. The monument is in a remarkably good state of preservation, is enclosed by stout iron railings, and is scheduled under the Ancient Monuments Protection Act of 1882. The freehold building land of eighteen and a half acres is offered as an ideal site for a convalescent home.

MESSRS. GEORGE MILLS & Co., LTD., Radcliffe, have received the following letter from the Mutual Spinning Co., Ltd., Heywood:—"Your (Titan) sprinklers practically saved us from having a very serious fire on the 17th ult. A man was going his round in our No. 1 Mill just before 6 A.M. lighting the gas previous to the operatives commencing work. In passing through the cotton mixing-room he stumbled near a number of bales of cotton which lay opened ready for mixing, and the light he was carrying came into contact with the cotton. The cotton ignited and the flames spread rapidly, but fortunately the sprinklers came into operation at once, and kept the fire 'well under' until the mill brigade got to work, when the fire was very quickly extinguished. We were pleased with the prompt action not only of the sprinklers, but of the alarm and everything in connection with the sprinkler installation."

At a meeting of the Law Society to be held on April 7 at 2 P.M., Mr. J. S. Rubinstein will move:—"That, having regard to the fact that the Report dated January 19 last of the Royal Commission on the Land Transfer Acts fully supports the contention that the present system of Registration of Title creates unnecessary difficulty, expense and delay in dealing with property subject to such registration, and in view of the statements made by the Commissioners that the effect of Compulsory Registration with Possessory Title in London has been to place a purchaser there at a disadvantage as compared with a purchaser elsewhere, and that the system as it stands is imperfect, this meeting is of opinion that the experimental trial of the system in the County of London, involving an expenditure of about 55,000l. per annum, should be brought to an end at once."

THE Architect and Contract Reporter.

FRIDAY, APRIL 7, 1911.

Published weekly, subscription 19s. per annum for Great Britain, and for Colonial and Foreign subscriptions £1 6s. 6d. All business communications to the Managing Director,

P. A. GILBERT WOOD,

Publishing Offices, 6-11 Imperial Buildings, Ludgate Circus, London, England.

Telephone No. 4725 Holborn.

Branch Offices at 43 OLD QUEEN STREET, S.W., Messrs. W. HAY FIELDING & CO. being the representatives for all business purposes.

The Birmingham Offices are at 102 COLMORE ROW.

Entered in the United States of America as second-class matter.

AGENTS FOR AMERICA:

The International News Co., 5 Bream's Buildings, Chancery Lane, London, England, and New York.

AGENTS FOR CANADA:

Messrs. WM. DAWSON & SONS, Ltd., 91 Church Street, Toronto, to whom all correspondence for Subscription and Advertising Rates should be made.

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Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

Special Position Spaces.—Unless ordered for weekly insertions the Proprietors cannot guarantee particular dates.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit the insertion of lengthy communications.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

As great disappointment is frequently expressed at the nonappearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

NOTICE.

Next Friday being Good Friday, THE ARCHITECT will be published on Thursday. All advertisements intended for this Number must reach the Office not later than 4 P.M. on Wednesday, April 12.

No alteration of advertisement copy can be allowed after Saturday morning, April 8.

COMPETITIONS OPEN.

ARGENTINE.—April 20.—A competition of plans for a hospital and school of medicine, to be erected at Rosario in celebration of the Argentine Centenary at a cost of about 149,000l. Prizes of 1,050l., 700l. and 440l. will be awarded. A copy of the conditions, &c., may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, London, E.C., where also a limited number of copies are available for distribution. Plans must be sent to the "Secretaria de la Comisión Pro-Hospital é Instituto de Enseñanza Médica del Centenario, Calle Córdoba 1230," Rosario.

ATHENS.—Sept. 25.—An international competition of plans is invited by the Greek Ministry of the Interior (Public Works) for the erection of a Court of Justice at Athens. The cost of the building must not exceed 160,000l. A first prize of 800l., and a second prize of 320l. will be awarded. The Greek Official Gazette, containing particulars (in Greek and in French) may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

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BRADFORD.—June 1.—The Board of Management of the Bradford Infirmary invite plans with estimates for a new infirmary in Duckworth Lane. Mr. Keith D. Young, F.R.I.B.A., will act as assessor. Deposit 3*l.* 3*s.*, which will be refunded on receipt of a *bona-fide* design or if block plan, instructions, &c., are returned within a month after receipt of replies to competitors' questions. The Secretary Superintendent of the Royal Infirmary, Bradford. (For further particulars see advertisement, January 13.)

BULGARIA.—April 30.—An international competition will be held of plans for a building which it is proposed to erect in Sofia for State and municipal offices. The following four prizes will be given, viz., 280*l.*, 120*l.*, 80*l.*, and 4*l.*. Applications must be sent to the "Kreis-Permanenz-Ausschuss," Sofia.

CHESTERFIELD.—May 15.—The Standing Joint Committee for Derbyshire invite architects practising in the county to submit designs for a Court-house and lock-up to cost 8,000*l.*. Mr. F. Baggallay, F.R.I.B.A., will act as assessor. Deposit 3*l.* 3*s.*. Apply to Mr. G. C. Copstick, F.R.I.B.A., County Offices, Derby.

CUBA.—April 15.—An international competition has been arranged for a Presidential Palace to be erected at Havana at a cost of about 205,000*l.*. Premiums of 10,000 pesos and 5,000 pesos will be awarded. Conditions may be seen at the Cuban Legation, 3 Grosvenor Mansions, Victoria Street, S.W., or the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

DEVIZES.—May 10.—The Committee of the Devizes Cottage Hospital invite competitive designs for providing a new six-bed ward at, and making a general re-arrangement of, their existing hospital (16 beds) at a maximum cost of from 1,200*l.* to 1,500*l.*. Deposit 10*s.* 6*d.*. Conditions of competition and particulars of the buildings required will be supplied to intending competitors by Mr. E. Thorp, honorary secretary, Devizes.

MANCHESTER.—May 1.—The Corporation invite designs for a Library and Art Gallery upon the Piccadilly site in the centre of the city. The Preliminary Competition closes May 1. The authors of ten selected designs will compete in the Final Competition. Mr. Reginald Blomfield, A.R.A., will act as assessor, in connection with the city architect. Apply for particulars to Mr. Thomas Hudson, Town Clerk, Town Hall, Manchester.

STOCKPORT.—April 22.—Architects desirous of entering a limited competition for the designs of the Police Station and Courts which the Corporation propose to erect are invited to forward their names and addresses, with particulars of their qualifications and experience in the erection of similar buildings, on or before Saturday, April 22, to Mr. Robert Hyde, Town Clerk, Town Hall, Stockport.

WALES.—May 5.—The Corporation of Swansea invite architects to submit designs and estimates for the Castle Street improvement. Deposit 1*l.* 1*s.*, which will be refunded on receipt of a *bona-fide* design or if block plan and particulars are returned within a fortnight after receipt. The architect appointed to prepare the working drawings will be paid not more than 250*l.*, and a premium of 50*l.* will be paid for the second design. Mr. S. S. Reay, F.R.I.B.A., will act as assessor. Apply to the Town Clerk, Guildhall, Swansea.

CONTRACTS OPEN.

ACCRINGTON.—April 19.—For the arching of the River Hyndburn and the erection of boundary walls required in the proposed extension of the Coppy Clough Sewage Works, Church. Deposit 2*l.* 2*s.*. Mr. W. J. Newton, A.M.I.C.E., engineer to the Board, Town Hall, Accrington.

APPERLEY BRIDGE.—For the various works in the extension of Valley Mills, Apperley Bridge, near Bradford. Apply at once to Mr. G. Fredk. Bowman, architect, 5 Greek Street, Leeds.

BARNSTAPLE.—April 12.—For erection of a public convenience at the Rock Park. Mr. E. Y. Saunders, borough surveyor.

BARROW-IN-FURNESS.—April 12.—For alterations to the Devonshire Road Hospital. Deposit 1*l.* 1*s.*. The Borough Engineer's Office, Town Hall.

BELFAST.—For erection of a church in Belfast. Send names at once to Mr. E. H. Lingen Barker, architect, 21 Princes Square, London, W.

BELFAST.—April 12.—For erection of a warehouse in Alfred Street and Clarence Street, Belfast, for Messrs. Walpole Bros., Ltd. Deposit 2*l.* 2*s.*. Mr. J. A. Hanna, C.E., architect, Ocean Buildings, Belfast, and Messrs. W. H. Stephens & Sons, 13 Donegall Square, North, Belfast.

BERWICK-UPON-TWEED.—April 11.—For erection of a concrete dressing shed at the men's bathing pond, Greens Harbour. The Borough Surveyor's Office, Berwick-upon-Tweed.

BRADFORD.—April 11.—For the builders' work, all trades to be let in one contract, in connection with extensions and additions to the medical officers' residence at the Workhouse, Horton Lane. Deposit 1*l.* 1*s.*. Mr. Fred Holland, architect, 22 Manor Row, Bradford.

BRISTOL.—April 12.—For building a retaining wall and for levelling and tar-paving the playground at Windmill Hill junior girls' school. Mr. P. Addie, Exchange, Corn Street, Bristol.

CARNFORTH (LANCS.).—April 19.—For the enlargement of Carnforth Post Office, for the Commissioners of H.M. Works and Public Buildings. The Postmaster at Carnforth Post Office and H.M. Office of Works, Storey's Gate, London, S.W.

CHESTER-LE-STREET.—April 21.—For additions (comprising a second court and new witnesses' room) to the county police station. Mr. W. Crozier, A.M.I.C.E., county architect and surveyor, Shire Hall, Durham.

CHESTER.—April 14.—For additions and alterations to the Queen's School. Deposit 2*l.* 2*s.*. Mr. P. H. Lockwood, architect, St. Werburgh Street, Chester.

COLEHAM (SHREWSBURY).—April 15.—For building a riding school and offices at Coleham, Shrewsbury, for the Shropshire Territorial Force Association. Send names and 1*l.* 1*s.* deposit by April 8 to Mr. F. H. Shayler, F.R.I.B.A., 16 Pride Hill, Shrewsbury.

CROSSGATES.—April 8.—For erection of small school-chapel at Crossgates, Yorks. Send names before April 8 to Mr. H. E. Illingworth, A.R.I.B.A., architect, 8 East Parade, Leeds.

DURHAM.—April 11.—The County Council of Durham invite sole tenders for the erection of new schools at Shiny Row (for about 820 scholars) and New Seaham (for about 450 scholars.) Mr. W. Rushworth, Shire Hall, Durham.

EAST GRINSTEAD.—April 15.—For the construction (reinforced concrete) of an open-air swimming bath. Mr. W. E. Woollam, engineer and surveyor, East Grinstead.

EAST HOWE.—April 13.—For erection of an elementary school at East Howe, Kinson, Dorset. The County Surveyor's Department, County Offices, Dorchester, and Messrs. Fletcher, Son & Brett, Wimborne.

ELDON.—April 19.—For the works required in erection of a church hall and Sunday school premises at Eldon, near Bishop Auckland. Send names to Mr. W. A. Kellett, architect, Bishop Auckland.

FARCET.—April 12.—For erection of a Council infants' school at Farcet, Hunts. Deposit 1*l.* 1*s.*. County Surveyor's Offices, 36 High Street, Huntingdon.

FELIXSTOWE.—For erection of six houses at Felixstowe. The Coast Development Corporation, Ltd., Felixstowe.

HALIFAX.—April 11.—For the various works required in erection of two pairs of semi-detached villa residences, &c., on the West Royd Estate, King Cross. Messrs. Medley Hall & Son, architects, 1 Harrison Road, Halifax.

HALIFAX.—April 22.—For works required in erection of additions to West Croft Mills. Messrs. C. F. L. Horsfall & Son, architects, Lord Street Chambers, Halifax.

HUDDERSFIELD.—April 19.—For erection of additions to branch store at Marsh, for the Huddersfield Industrial Society, Ltd. Mr. J. Berry, architect and surveyor, 3 Market Place, Huddersfield.

IRELAND.—April 24.—For the erection of County Council Offices at Navan, Co. Meath. Deposit 1*l.* 1*s.*. Mr. J. J. Inglis, architect, 5 Nassau Street, Dublin.

KEARSLEY.—April 26.—For the erection of a new elementary school at Kearsley for 504 children, with accommodation for manual instruction, cookery and laundry work. Deposit 2*l.*. Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

KENDAL.—April 10.—For the various works required in rebuilding the Kendal Green school (recently destroyed by fire) on the same site, enlarging and modernising. Mr. John Hutton, M.R.S.I., architect, Kendal.

KEXBOROUGH.—April 12.—For the various works required in pulling down and rebuilding the White Bear Inn, for Lord Allendale. Messrs. R. & W. Dixon, architects, 5 Eastgate, Barnsley.

LIGHTCLIFFE.—April 10.—For the mason's, joiner's, plasterer's and slater's, concreter's, plumber's and glazier's work required in erection of a house at Lightcliffe, Yorks. Messrs. Walsh & Nicholas, architects and surveyors, 10 Harrison Road, Halifax.

LONDON.—April 11.—For alterations and additions to the Electricity Works, High Street, Mortlake. Mr. G. Bruce Tomes, A.M.I.C.E., surveyor, High Street, Mortlake, S.W.

LONDON.—April 12.—For the construction of a 4-stall urinal at Mount Pleasant, for the Holborn Borough Council. The Borough Surveyor, Council Offices, 193-7 High Holborn, W.C.

LONDON.—April 13.—For repairing the floors of the eight dayrooms in the old ward block at the Infirmary buildings, Cale Street, Chelsea, S.W. Send names and 1l. 1s. deposit by April 10 to Mr. E. J. Harrison, architect, 9 Gray's Inn Square, Holborn, W.C.

LONG EATON.—April 10.—For erection of public lavatories for both sexes at the junction of the Nottingham and Derby roads. Deposit 3l. 3s. Mr. F. Worrall, A.M.I.C.E., engineer and surveyor, Electricity Supply Works, Long Eaton.

MILLOM.—April 19.—For extension of the secondary school and P.T. centre, for the Education Committee of the Cumberland County Council. The Institute, Millom, or Mr. Hastwell Grayson, architect, 31 James Street, Liverpool.

MOUSEHOLE (Cornwall).—April 8.—For the erection and completion of the proposed Council school. Mr. Sampson Hill, architect to the Cornwall Education Committee, Green Lane, Bedruth.

NEWARK.—April 18.—For erection of buildings in Barnby Road for the Isolation Hospital. The Surveyor's Office, Town Hall, Newark.

NEWCASTLE-ON-TYNE.—April 19.—For erection of branch Post Office, Heaton. The Postmaster at Newcastle-on-Tyne.

NORFOLK.—April 19.—For proposed alterations and improvements at Cantley School, the enlargement and improvement of North Lopham or Great Walsingham schools, or for improvements at Whissonett school, for the Norfolk Education Committee. Send names by April 8 to the Secretary, Education Office, Shirehall, Norwich.

OSWALDTWHISTLE.—For erection of branch shop and cottage at the end of Catlow Hall Street. Mr. G. Riley, architect and surveyor, Albert Street, Oswaldtwhistle.

RASTRICK.—April 10.—For the various works required in erection of a Council school at Carr Green Lane, for the Brighouse Education Committee. Apply by April 10 to Messrs. Sharp & Waller, architects, 32 Bradford Road, Brighouse.

READING.—April 27.—For the execution of the works necessary in adaptation of certain existing buildings at the corner of Valpy Street and Forbury Road for the purposes of a justices' room, police station and quarter and petty sessions house, and for the erection of new buildings for cells and an inspector's house in connection therewith, for the Town Council. Send in names to Mr. S. Slingsby Stallwood, F.S.A., architect, 27 Market Place, and 2l. 2s. to the Borough Accountant, Valpy Street, Reading.

ST. ALBANS.—April 14.—For erection of St. Paul's Vicarage. Deposit 2l. 2s. Messrs. Cutts, architects, 14 Southampton Street, Strand, W.C.

SALFORD.—April 24.—For erecting new infants' school in Nashville Street. Deposit 1l. 1s. Messrs. Woodhouse, Corbett & Dean, 100 King Street, Manchester.

SCOTLAND.—For the mason, carpenter, plumber, slater, plaster, and painter work in rebuilding the Brander Arms, Lossiemouth, for the Lossiemouth Harbour Co. Mr. R. B. Pratt, A.R.I.B.A., architect, 110 High Street, Elgin.

SCOTLAND.—For mason, carpenter, plumber, slater, plaster, painter, and iron work in erecting a rectory for the minister of Holy Trinity Church, Elgin. Mr. R. B. Pratt, A.R.I.B.A., architect, 110 High Street, Elgin.

SCOTLAND.—For the following works, for the Dundee Town Council, viz.:—(1) Bowl house, Lochee Park. (2) alterations at Albert Institute; (3) painting District police stations; (4) alterations on shops, Princes Street. Mr. J. Thomson, city engineer, 91 Commercial Street, Dundee.

SCOTLAND.—April 8.—For mason, joiner, plumber and plaster work required in connection with a new bathroom, &c., at the Fever Hospital, Kirkcaldy. Burgh Surveyor's Office, Kirkcaldy.

SCOTLAND.—April 8.—For the joiner, slater and plaster, and plumber work in the reconstruction of the old Free Church Manse, Strathfillan, Tyndrum, for the Killin School Board. Mr. T. M. Logan, architect, Tayview, Killin.

SCOTLAND.—April 10.—For mason, joiner, slater, and plumber works of additions proposed for farm offices at Templemains Farm, Innerwick. Tenant at Templemains Farm House, Innerwick, East Lothian.

SCOTLAND.—April 12.—For the mason, carpenter, slater, and plaster work of postmaster's house and post office, to be erected at Nether Sunnyside Park, Drumoak. Messrs. A. Stronach, jun., & Son, advocates, 20 Belmont Street, Aberdeen.

SCOTLAND.—April 17.—The Commissioners of H.M. Works and Public Buildings are prepared to receive tenders for the reconstruction of the National Gallery of Scotland. Tenders are required for the whole work, and not for separate trades. Deposit 1l. 1s. H.M. Office of Works, 3 Parliament Square, Edinburgh.

SEAFORD.—May 1.—For erection of a refuse destructor house and chimney at the Sewage Pumping Station, Brooklyn Road, together with the inclusion in the contract of the supply and erection by Messrs. Meldrum Bros., Ltd., of a two-cell refuse destructor and boiler, and works incidental thereto. Messrs. Pollard & Tingle, engineers, 31 Old Queen Street, Westminster, or Mr. W. H. Pawson, clerk, 3 Clinton Place, Seaford.

SLAITHWAITE.—April 12.—For erection of two shops, offices, and bakehouse in Carr Lane and New Street, Slaithwaite, Yorks. Mr. J. Berry, architect and surveyor, 3 Market Place, Huddersfield.

STROUD.—April 18.—For the provision and erection of a refuse destructor and other works connected therewith. Deposit 1l. 1s. Mr. G. P. Milnes, A.M.I.C.E., engineer, Stroud.

THORNBURY.—April 21.—For whole or separate trades required in new church at Thornbury, Bradford. Messrs. Wright & Son, surveyors, Lancaster, and Messrs. Austin & Paley, architects, Lancaster.

TONBRIDGE (KENT).—April 21.—For the following section of sewage disposal works, for the Tonbridge Urban District Council:—Contract No. 1, additions and alteration to the pumping station, construction of new and additions to old tanks, new percolating filters, &c. Deposit 5l. Mr. W. Laurence Bradley, engineer, The Castle, Tonbridge, Kent.

WAKEFIELD.—April 8.—For the various works in the erection of a public elementary school in Lawefield Lane. Messrs. Watson, Son & Ellison, architects, Wakefield. Send names and 1l. 1s. deposit for each trade, or 3l. 3s. deposit for complete set by April 8 to Mr. P. Glover, Secretary Education Department, Town Hall, Wakefield.

WAKEFIELD.—April 11.—For stripping off and clearing away the existing floor in the large saloon, in Wood Street, and relaying same in maple or other hard wood, for the Wakefield Institute of Literature and Science. Mr. G. F. Nurse, hon. sec.

WALES.—For erection of Primitive Methodist Sunday school and class-rooms in Gladstone Street, Cross Keys. Apply to Rev. D. S. Lees, Carlton Terrace, Cross Keys, Mon., or to Mr. H. Harper, architect, Market Place, Nottingham.

WALES.—April 10.—For erection of six houses at Station Road, Llandovery. Mr. D. Jones, Llandovery Station, Llandovery, or Mr. T. Roderick, architect, Ashbrook House, Aberdare.

WALES.—April 10.—For works of improvements and alterations to the Rhiwhiriaeth Council school, Montgomeryshire. Deposit 1l. 1s. Mr. L. Phillips, clerk, County Education Offices, Newtown.

WALES.—April 11.—For erection of a shop, house, bakery, &c., at 9 Bridge Street, Swansea. Send names and 1l. 1s. deposit to Mr. A. I. Jones, architect and surveyor, Carmarthen.

WALES.—April 12.—For the re-erection of central part (girls' department) of Penydarren old schools after recent fire, for the Merthyr Tydfil Education Committee. Mr. J. Llewellyn Smith, M.S.A., architect, Aberdare.

WALES.—April 13.—For alterations and additions to the Caerphilly Station Inn, Caerphilly, Glam. Deposit 2l. 2s. Mr. H. J. Griggs, A.R.I.B.A., architect, Metropolitan Bank Chambers, Newport, Mon.

WALES.—April 15.—For erection of semi-detached villas at Edeyrn, near Nevin. Captain Williams, Angorfa, Edeyrn.

WALES.—April 19.—For erection and completion of a drill hall, lecture room, armoury, caretakers' quarters, &c., at Fishguard, for the Pembrokeshire Territorial Force Association. Deposit 1l. 1s. The Headquarters of the No. 3 Company, Pembroke R.G.A. (T.F.), Brodog Terrace, Fishguard.

WALES.—April 22.—For the erection of a church at Pont-yates, near Llanelly. Mr. W. Griffiths, F.S.I., architect, Llanelly.

WALES.—April 22.—For erection of a fire station and offices in Bishop's Road, Whitechurch, near Cardiff. Deposit 1l. 1s. Mr. C. H. Kempthorne, architect and surveyor, 24 High Street, Cardiff.

WEST HAM.—April 24.—For sundry small alterations at four schools in the borough, for the West Ham Education Committee. Send names and 1l. deposit by April 12 to Mr. W. Jacques, A.R.I.B.A., architect to the Education Committee, 2 Fen Court, Fenchurch Street, E.C.

WHITLEY BAY.—April 11.—The Whitley and Monkseaton Urban District Council are prepared to receive tenders for the following works, viz.:—a. The taking down and removing of the existing bandstand on the Links and its re-erection in a new position above the Table Rocks. b. The construction of foundations for a new bandstand on the Links on the site of the present bandstand. Mr. A. J. Rousell, A.M.Inst.C.E., Surveyor to the Council, Whitley Bay.

WINDSOR.—April 14.—For the execution of works required to be done in alterations at the workhouse at Old Windsor. Messrs. Edgington & Spink, architects, 52 High Street, Windsor.

WORTHING.—April 24.—For erection of a school of art on a site in Union Place. Send names and 1l. 1s. deposit by April 8 to Mr. Haydn P. Roberts, A.R.I.B.A., county education architect, Thurloe House, High Street, Worthing.

TENDERS.

BRACKNELL.

For the erection of offices, for the Easthampstead Rural District Council. Mr. CECIL H. PERKINS, Bracknell.

Spear & King.	£984	0	0
Sargeant.	900	0	0
Brown	899	6	0
Payne & Co.	879	0	0
Baker, Binfield*	753	0	0
Architect's estimate	850	0	0

*Accepted subject to approval of Local Government Board.

DARTFORD.

For the erection of a new secondary school, for the Kent Education Committee. Mr. WILFRID H. ROBINSON, M.S.A., architect.

Ellingham	£9,777	0	0
Kazak	9,681	14	11
Johnson & Co.	9,672	0	0
Baker & Son	9,625	0	0
J. & M. Patrick	9,400	0	0
General Building Co.	9,367	5	9
Browning	9,280	0	0
Somerford & Son.	9,259	0	0
Friday & Ling	9,050	0	0
West Bros.	8,990	0	0
Crossley & Son	8,930	0	0
Knight	8,929	0	0
Blay	8,888	0	0
Gunning & Sons	8,798	0	0
Wallis & Sons	8,784	0	0
Archer & Son	8,757	0	0
Foster	8,686	0	0
Woodhall & Son	8,575	10	0
Podger & Sons	8,486	0	0
Godden & Sons, Ashford (recommended)	8,422	0	0

HINCKLEY.

For erection of a factory. Messrs. HEATON & WALKER, architects and surveyors, Hinckley.

Rourke	£3,140	0	0
Hall & Son	3,109	10	0
Flavell	3,023	10	0
Rowley	2,915	0	0
Greaves	2,912	6	3
Sharp	2,896	0	0
Littler & Son	2,875	0	0
Potter	2,872	16	7
Bentley & Co.	2,867	0	0
Chaplin	2,833	17	0
Grove	2,826	0	0
Sleath	2,795	15	0
Goodman & Son	2,765	0	0
Clarke & Son	2,736	0	0
JEFFCOTE, Hinckley (accepted)	2,682	17	0

ILKETSHALL.

For the enlargement of the Ilketshall St. Lawrence C. School, East Suffolk. Mr. J. WEBB, building surveyor, Ipswich.

Botwright	£425	0	0
Hindes & Co.	424	0	0
GAYFORD, Ipswich (accepted)	395	0	0
Trudgett.	379	0	0
Calver	330	0	0

ISLE OF WIGHT.

For the provision of new timber groyne, for Ventnor Urban District Council. Mr. H. HUGHES OAKES, surveyor, Ventnor.

Bevis	£2,750	0	0
Leslie & Co.	941	0	0
Brebner & Co.	925	0	0
Sims	825	0	0
Stevens & Co.	820	0	0
Griffiths & Co.	768	0	0
Cochrane & Co.	750	0	0
Swales	720	0	0
Cooper & Co.	714	0	0
Exors. of J. Arundel	693	17	9
Harvey	685	0	0
Sanguin	676	7	5
LININGTON, Wroxall, near Ventnor (accepted)	638	18	0

LEIGH.

For erection of public offices and fire station, for the Urban District Council.

Offices.

Davidson	£4,499	0	0
Green	4,350	5	7
Brown	4,215	0	0
Brand, Pettitt & Co.	4,170	0	0
Symes	4,108	0	0
Patterson & Son	4,021	6	0
Hackley Bros.	3,928	19	1
Patrick	3,901	0	0
Moss & Co.	3,900	0	0
Marrable Bros.	3,888	7	3
Coxhead	3,879	10	0
F. & G. Davey	3,800	0	0
Fryd	3,773	0	0
E. & B. H. Davey	3,742	14	10
Wells & Co.	3,607	11	5
F. DAVEY (accepted)	3,438	0	0
Fitch & Co.	3,319	0	0

Fire station.

Davidson	1,277	7	9
Green	1,275	13	10
Marrable Bros.	1,248	12	7
Brand, Pettitt & Co.	1,220	0	0
Symes	1,211	0	0
Brown	1,149	0	0
Patterson & Son.	1,147	14	1
Coxhead	1,105	10	0
Fryd	1,102	0	0
Hackley Bros.	1,102	10	4
Moss & Co.	1,100	0	0
F. & E. Davey	1,100	0	0
Patrick	1,089	0	0
Fitch & Co.	1,071	0	0
Wells & Co.	1,055	8	7
E. & B. H. Davey	1,011	0	0
F. DAVEY (accepted)	1,008	0	0

LONDON.

For the extension of the southern high-level sewer No. 2 from Catford to Nunhead, for the L.C.C.

Mowlem & Co.	£122,943	0	0
Nott	119,737	8	5
Monk & Newell	113,535	6	0
Pollok	110,341	12	2
McAlpine & Sons	107,145	5	4
Price	107,098	3	1
Muirhead & Co.	106,133	19	6
Griffiths & Co.	103,409	0	0
Kinnear, Moodie & Co.	100,953	13	7
Scott & Middleton	99,253	9	4
Westminster Construction Co.	97,620	16	8
Pearson & Son	95,653	4	5
Coles	94,210	18	2
Wm. Underwood & Bros., Dukinfield (recommended)	88,398	14	9
Engineer's estimate	102,113	11	8

LONDON—continued.

For alterations and additions to 129 Lewisham High Road,
S.E. Mr. A. RUSSELL, M.S.A., architect, 13 Basinghall
Street, E.C.

Rose	£698	0	0
Shorter & Co.	615	0	0
Leng	593	0	0
H. GROVES, Greenwich (accepted)	548	0	0

For execution of the necessary structural alterations, drain-
age work, &c., at 603 Fulham Road, for the Fulham
Borough Council.

Cruse	£544	0	0
Swan Bros.	519	0	0
Bland & Co.	482	10	0
Gasson, Cockerill & Co.	472	10	0
Harwood & Co.	435	0	0
Savage	425	14	1
Waddington & Sons	395	0	0
Roberts	374	10	0
Borough Surveyor (recommended)	320	0	0

MAIDENHEAD.

For the erection of the new administration block, laundry
and disinfecting buildings at the Isolation Hospital.
Mr. PERCY JOHNS, borough surveyor, Maidenhead.

Exors. of the late F. Bissle	£1,325	0	0
Silver & Sons	1,292	0	0
Creed	1,217	0	0
Partlo.	1,197	0	0
Cox & Sons.	1,196	0	0
Lovell & Son (recommended)	1,179	0	0

NEWTON ABBOT.

For the erection of a market manager's house, fire station,
and six lock-up shops, on the site of the slaughter-
house. Mr. C. W. WHITE, borough surveyor, Newton
Abbot.

Wilkins & Sons	£2,252	0	0
Bearne	2,182	1	0
Zealley	1,940	12	8

For repairs, decorations, and the construction of a new room
in the Town Hall and Courtenay Street Hall buildings.

Parker	£3.4	0	0
Zealley	332	9	0
L. BEARNE, Newton Abbot (accepted)	253	0	0

For heating the Town Hall and Courtenay Street Hall.

Spry & Co.	£268	7	6
Sale	265	0	0
Hocking	242	0	0
Harding & Sons	240	12	0
Algar & Sons.	236	0	0
Russell & Co.	215	0	0
Garton & King	196	17	0
Northcott & Sons	176	16	0
Robinson	153	0	0

For a new sewer in Highweek village.

Zealley	£195	2	0
Shaddock	191	2	8
Wilkins & Sons	175	17	0

SHEERNESS.

For the construction of settling tanks, clear water tank, and
sundry other works, for the Urban District Council.
Mr. F. W. S. STANTON, A.M.I.C.E., consulting engineer.

Rayner	£1,327	8	2
Ball & Co.	1,005	8	3
GRIFFITHS & Co., Hamilton House, Bishopsgate, E.C. (accepted)	738	11	3
Elliott & Co.	825	12	8

WEST HAM.

For painting and cleansing at Plaistow Hospital, for the
West Ham Town Council.

Finch & Co.	£1,155	0	0
Jerram.	1,139	0	0
Kemp	1,034	16	0
Harvey	1,090	19	6
Stokes & Sons	998	8	6
Proctor.	890	0	0
Beaumont & Sons	843	7	10
Scott & Fenn	778	12	6
E. BURNS & Co., Plaistow (accepted)	797	0	0
Woollaston & Co.	706	0	0

THE ROYAL BOROUGH OF KENSINGTON.

LAND TRANSFER ACTS.

REPORT of the Law and General Purposes Committee of
the Council of the Royal Borough of Kensington upon the
report of the Royal Commission on the Land Transfer Acts
submitted to and adopted by the Council at a meeting held
on the 28th March, 1911:—

We have considered, pursuant to the reference by the
Council of the 14th February, 1911, the report of the Royal
Commission on the Land Transfer Acts dated the 19th
January, 1911. In order to better explain the conclusions
we have come to we think it desirable to briefly recall the
action taken by the late Vestry and by the present Council
since the subject first came under notice in 1897.

1. The Land Transfer Act, 1897, empowered the Privy
Council to select one county in England in which the regi-
stration of title to land under the Land Transfer Act, 1875,
was as an experiment to be made compulsory.

2. In November, 1897, the London County Council were
asked to consent to the system being made compulsory in the
County of London. That Council thereupon sent a circular
letter to local and other bodies inviting an expression of their
views on the subject. On the 1st December, 1897, the late
Vestry of Kensington adopted a report enumerating the
serious objections that existed to the system being tried as
an experiment in London and informed the London County
Council that they did not approve of registration of title
being made compulsory in London.

3. Notwithstanding that the large majority of the local
bodies and all the other bodies interested in property who
were invited to give their views expressed themselves as un-
favourable to compulsory registration, the London County
Council on the 15th February, 1898, adopted a resolution in
favour of the trial of the system in the County of London
on the understanding that it would be introduced progres-
sively so as to give the Council an opportunity of estimating
the value of the work as it proceeded and of watching gener-
ally the progress of the Act.

4. The Act came into operation on the 1st January, 1899,
and the experience since gained proves conclusively that the
predictions embodied in the report of the Kensington Vestry
as to the system being a harmful and unworkable one have
been borne out.

5. In 1903 this Council promoted a petition to Parliament
praying for an inquiry into the result of the working of the
compulsory provisions of the Land Transfer Act, 1897. The
petition when presented was sealed by eighteen of the Metro-
politan Borough Councils.

6. In May, 1907, this Council adopted a further report
on this subject. It referred to the unsuccessful efforts that
had been made to obtain an inquiry, and indicated some of
the glaring defects of the system and the expense, delay and
complication it involved. We cite the following paragraphs
and recommendations from this report as they embody the
practical conclusions we then came to and which we still
desire to emphasise:—

"When the Act of 1897 was passed Parliament provided
that in the event of the experimental trial proving a failure
the Privy Council might revoke or vary any Order applying
compulsory registration to any county. In our view the time
has now arrived when this provision of the Act should be put
into force.

"For some two centuries there has been in existence in
two counties in England—Middlesex and Yorkshire—regis-
tration offices for the registration of deeds relating to land.
This system of registration is entirely distinct from the
system of registration of title under the Land Transfer Acts.
The work of registering deeds under the Middlesex Registry
Acts is simple in the extreme, and the registration fees are
limited in every case to 5s.

"The Middlesex fees were, until 1891, received by the
Middlesex Registrar as the emoluments of his office. They
have since been diverted towards the upkeep of the Land
Registry Office, and are estimated to produce a surplus of
about 15,000*l.* a year, independently of the fees chargeable
under the Land Transfer Acts.

"In the county of Yorkshire the fees are, under the pro-
visions of the Yorkshire Registry Acts, 1845 and 1885, pay-
able to the local authorities in aid of the rates. They
amount to some thousands of pounds a year. In our opinion
the fees of the Middlesex Registry should be treated in a
similar manner, and paid over to the London County Council
in aid of the county rate.

"Having regard to the facts set out in this report we
recommend:—

"(1) That in view of the fact that the system of compul-

possession registration of title has now been tried as an experiment in the County of London for over eight years, and has been found to add greatly to the difficulty, expense, delay and risk of property dealings in London, the Council do endorse the view that the Order applying compulsory registration to the County of London should be forthwith revoked, so as to leave it optional for everyone to register or not as he deems best in his own interest.

"(2) That the report be communicated to the London County Council and to its members, and that they be urged to support the views set forth therein, and to claim in aid of the rates the Middlesex Registry fees, estimated at 15,000*l.* a year, thereby following the example of the Yorkshire County Councils, who receive for the ratepayers the Yorkshire Registry fees."

7. The action of this Council in co-operation with other Metropolitan Borough Councils led ultimately to the London County Council in January, 1908, passing a resolution requesting the Lord Chancellor to provide for an inquiry, and on the 30th July, 1908, a Royal Commission was appointed. The terms of reference "to consider and report upon the working of the Land Registry Acts and whether any amendments are desirable" were too restricted, and were calculated to prevent the Commission considering the one vital question involved, viz. whether or not the experimental trial of the system of compulsory registration of title in London should be continued.

8. On the 6th October, 1908, this Council adopted a further report giving expression to this view, and also urging that in the interests of the public it was highly expedient that at the then pending inquiry the evidence should be taken in public. The efforts that were made by this Council and by other bodies (1) to have the number of Commissioners increased by the addition of an adequate number of solicitors, (2) to have the terms of reference enlarged, and (3) to secure that the evidence should be taken in public, were unfortunately fruitless.

9. Between October, 1908, and November, 1909, the Commission held thirty-six sittings and examined eighty-four witnesses. An offer made by this Council to tender evidence was at first refused on the plea that the Corporation of the City of London and the London County Council both intended to give evidence which it was presumed would cover any evidence that this Council might tender. As a result, however, of further representations the Commissioners withdrew their objection, and the Town Clerk (Mr. W. Chambers Leete) and Mr. Councillor J. S. Rubenstein were, on the 18th February and 4th March, 1909, examined as witnesses for the Council. Mr. Councillor Rubenstein considered that undue restrictions were placed upon him, and he therefore deemed it right to subsequently address a letter of protest, dated 8th March, 1909, to the Commissioners. The matter was reported to the Council on the 30th March, 1909, a copy of the letter being set out in the report.

10. In February, 1909, the evidence given before the Commissioners on behalf of the Land Registry was published by way of a preliminary report, and the evidence given on the other side has now just been published.

11. The final report of the Commission was published on the 11th February, 1911. Two of the Commissioners died before the issue of the report, one being Mr. Pennington, the only solicitor on the Commission.

12. The Commissioners, owing no doubt to the restricted terms of the reference, do not express any opinion on the real question in controversy, viz. whether or not the experimental trial of the system of compulsory registration of title in London should be continued. The perpetuation of the system is impliedly assumed.

13. On the question of expense the report recognises that registration throws upon landowners additional charges payable to solicitors and in office fees, the Commissioners stating that "it may fairly be urged that fees rising so high deter voluntary registration, and are felt as a hardship when it is compulsory. There is still more ground for objecting to the present fees on dealings with land registered with possessory title, because much less advantage is derived from such registration."

14. The question as to what return has been obtained for the fees paid is answered by the Commissioners who state "Much complaint is made, and in our opinion with good reason, that the immediate advantage to be gained from Possessory Registration is in no way commensurate with the expense and inconvenience it entails. . . . It is not too much to say that up to the present time the effect of Compulsory Registration with Possessory Title in London has been to place a purchaser there at a disadvantage as compared with a purchaser elsewhere."

15. The Commissioners have no praise for the existing system. They recall the observation made by a previous Commission that "for an institution to flourish in a free country it must offer to the people the thing that they want." They refer to the "alarm" that would be felt if effect were given to the Registrar's proposal that all landowners should be compelled at once to register their land and they say the objections to the proposal "could only be overborne by a really strong public feeling in favour of the compulsory Registration of Title," and that they "have been unable to find proof of the existence of any such feeling in the country." They go on to say, "But apart from this, the system as it stands is, in our judgment, imperfect; and we cannot recommend the compulsory extension of an imperfect system. We think that it should first be amended in the manner we have proposed and that if, after sufficient experience, the amended system is found to work satisfactorily within the present compulsory area of the County of London, a Bill for the gradual extension of compulsion on sales to the rest of the country . . . should then be considered by Parliament."

16. We recall the fact that innumerable attempts have been made since 1862 the date of the first Land Transfer Act to evolve a workable system of registration of title but one and all have ended in failure. We have not thought it necessary to consider in detail the new amendments suggested but the fact that one recommendation is that mortgages of registered land are to be effected by deed as if the land was not registered confirms our view that the present system even if amended cannot be made a satisfactory one.

17. Amongst the recommendations made by the Commissioners is a proposal that the precedent made by Parliament in the cases of Middlesex and Yorkshire should be followed, and that County Councils should be empowered to establish local Registries of Deeds. The suggestion was one that was strongly advocated by Mr. Councillor J. S. Rubinstein in his evidence and is fully endorsed by us.

18. Attention should, we consider, be directed to the fact that the total of the Registry fees exacted since 1899 amount to close on 700,000*l.* If to this sum is added the 250,000*l.* spent on the new Registry in Lincoln's Inn Fields, the total cost to the individuals and the State of the experiment is known to have amounted to nearly 1,000,000*l.* sterling. The Commission's Report makes it clear that for the last five years, notwithstanding that the receipts have averaged 55,000*l.* per annum, the Registry has been carried on at a loss of about 3,000*l.* per annum—a loss that will grow in amount if, as is suggested, the present high Registry fees are reduced. We consider it unjust to the taxpayers generally that they should have to bear any loss in the supposed interests of a small section of the community. It is, we submit, still more unjust that they should be further burdened by the continuance of an experiment which it is now obvious has entirely failed.

19. Having carefully considered the report we are of opinion that only one conclusion can be formed from a careful perusal of its contents and that is that the Land Registry Office has been unable to justify its existence, and that there is no sufficient reason why the County of London should any longer be trammelled with this costly experiment.

20. We feel that the Council will find themselves confirmed in the opinion which was embodied in the report which they adopted on May 7, 1907, that the Privy Council should exercise the power vested in them by revoking the order which applied compulsory registration to the County of London.

21. We therefore recommend:—(a) That a communication be addressed to the Privy Council urging them to revoke the Order which makes the registration of titles in the County of London compulsory. (b) That the London County Council and the Middlesex County Council be urged to claim in aid of the rates the fees received by the Middlesex Registry, estimated at 15,000*l.* a year, thereby following the example of the Yorkshire County Councils who receive for the ratepayers the Yorkshire Registry fees. (c) That the London County Council be further urged to take action with a view to obtaining forthwith, in accordance with the recommendation of the Commission, the extension to the whole of the County of London of the existing Deed Registry, and to secure for the ratepayers the resulting profits, estimated to produce an additional income of 12,000*l.* per annum. (d) That copies of this report be forwarded to the Prime Minister, the Lord Chancellor, and the Members of Parliament for the Metropolitan constituencies. (e) That copies of this report be also sent to the Corporation of the City of London, the Council of the City of Westminster and the Metropolitan Borough Councils, with the request that those authorities will support the action of this Council in the matter.

(Signed) A. G. COLVILLE, *Chairman.*

ARCHITECTS' CLAIM FOR FEES.

MESSRS. FAIR & MYER, architects, practising at 39 Fumival Street, Holborn, sued before Mr. Justice Grantham and a special jury in the King's Bench Division on April 5, the Harper Electric Piano (1910) Company, Ltd., of Holloway Road, London, for the recovery of 275*l.* for professional services rendered.

Mr. Alec Neilson, the plaintiffs' counsel, stated that in the spring of last year in pursuance of an agreement entered into between the parties, the plaintiffs were engaged to prepare plans and specifications for a cinematograph theatre, rink and café, which it was proposed to build at 321 Holloway Road, London. The plaintiffs prepared two sets of sketch plans and two sets of working drawings and a specification, and they also obtained a tender. For that they charged 150*l.*, that being 3 per cent. upon 5,000*l.*, the amount of the tender, according to the scale of charges authorised by the Royal Institute of British Architects. For taking quantities they had charged 125*l.*, that being 2½ per cent. upon the sum of 5,000*l.* These charges, as evidence would be called to show, were fair and reasonable.

Mr. Thorn Drury, for the defendants, said that from the first Messrs. Fair & Myer were told that the defendants were getting out a prospectus to go to the public for capital, and that the building would be proceeded with only if the capital were forthcoming. His case was that the plaintiffs were asked by the defendants as to what would be their position regarding the plaintiffs if the building did not go on, and that they said, "Oh, you pay us for the work we have done and we shall not quarrel about that." His clients, the defendants, had agreed to pay plaintiffs 5 per cent. upon the actual cost of the building, and it was to be an inclusive charge. Counsel declared that his clients had never abandoned the scheme. They were at this moment negotiating for the capital to enable them to build, and it would probably be forthcoming next week. Counsel reiterated that Mr. Harper told Mr. Fair that he would have nothing to do with such a basis as 2½ per cent., but would agree to an inclusive charge on the actual cost of the building.

Mr. Justice Grantham said he did not know whether that would entitle the defendants to get work out of the plaintiffs for nothing.

Mr. Neilson: My friend says that we were to be paid only if the building were carried out. Up to the issue of the writ they have not agreed to pay us for the work done.

Mr. Thorn Drury: There are letters offering twenty-five guineas.

Mr. Neilson said plaintiffs were employed in accordance with the terms contained in the R.I.B.A. schedule, a copy of which had been sent to the defendants. His clients, who were not quite novices in their business, recognised that the scheme might fall through, and in this schedule there was provision for the remuneration of architects when schemes did not go through.

Evidence was given by Mr. Val Myer, A.R.I.B.A., and partner in the plaintiff firm, to the effect that the charges they claimed were fair and reasonable and in accordance with the Institute scale.

Mr. Thorn Drury put it to the witness in cross-examination that they had never let it be understood at the outset that they would charge for taking off quantities, but that, on the contrary, they had proposed to do this as part of the work they had to do for 5 per cent.—The witness: Quite untrue. Answering another question by counsel, the witness said: "We take out quantities for our own jobs, but not for other people's jobs."

Mr. John William Fair, in the course of his evidence, said there was no truth in the suggestion that they agreed to look for payments from the defendants only if the building were erected. He added that 2½ per cent. was a customary and reasonable charge for taking off quantities. If the scheme had gone through the remuneration would have been 7½ per cent., including 2½ for quantities. In the North of England architects almost invariably took out their own quantities, which constituted quite a different branch. He admitted that quantity work in London was usually done by quantity surveyors. But he denied that 1½ per cent. was the usual charge. In answer to further inquiries the witness denied that he told Mr. Harper that if they did not raise the money for the scheme they (the architects) would not quarrel over the sum they would charge for their labour. It had happened often that tenders were obtained without plans having first been passed. He explained that very often a client would not care for delay, and wished to ascertain the cost of a building; knowing pretty well what the local authorities would require. One

went forward with his drawings, quantities and so forth, so that when the plans were passed the building could be proceeded with at once.

Mr. Phillips Fletcher, F.R.I.B.A., said that he considered the plaintiffs' charges fair and reasonable, both in respect to the plans and specifications and the quantities. The charges in respect to the plans were in accordance with the schedule of the Institute. But the quantities were specifically excluded from the schedule.

Mr. Neilson: Is it absolutely necessary to take out quantities before a tender can be obtained?—Yes. Before you can get any reliable builder to give you a reliable tender you must have quantities.

In cross-examination by Mr. Thorn Drury, the witness said that if the plans required adjustment in any way the quantities could be adjusted. The quantities would not be useless even if plans were wrong. Under the contract an architect had power to rectify. Architects in the North of England invariably did the quantity work as well. He thought for one thing that they worked harder in the North. Besides, they got more pay for so doing. But the taking out of quantities was quite a separate thing. In several law cases it had been decided that 5 per cent. did not cover that work.

In reply to Mr. Thorn Drury, who asked if it was not a common thing that quantity surveyors will do it for 1½ per cent., Mr. Fletcher said: You would not get a reliable surveyor to do it for that. You get cheap men in every profession.

Evidence was also given by Sir Alfred Brumwell Thomas, F.R.I.B.A., who said that he had inspected the plaintiffs' plans and specifications, and also the quantities, and he agreed with the last witness as to the fairness and reasonableness of the charges.

Hearing was adjourned.

THE PROPOSED MARYLEBONE TOWN HALL.

THE Finance Committee of the London County Council have had under consideration an application from the St. Marylebone Metropolitan Borough Council for sanction to the borrowing of a sum of 40,000*l.*, repayable within 60 years on the annuity system, for the acquisition of a site for a new town hall.

The Committee report as follows:—We are advised that the accommodation of the present town hall is inadequate, and that the proposed site is suitable for the erection of such buildings as are necessary for the adequate accommodation of a sufficient staff, including provision for probable future requirements; and that the price proposed to be paid, after allowance has been made for the facts that a portion of the site proposed to be acquired is in advance of the general line of buildings, and that it is unlikely that any buildings will be allowed by the Council on such portion, is not unreasonable. We are informed that a further sum will have to be spent in the acquisition of outstanding leasehold interests, which extend beyond 1913, in which year the purchase of the interests now in question will be completed. We are advised that the possibility that hereafter the borough council may be prevented from using the whole of the site for the purpose of a town hall is no legal objection to the sanctioning of the sum required for the acquisition of the whole of the site for such purpose, provided that the remainder of the property is sufficient for the purposes for which the borough council requires it, and that the price, having regard to the use that can be made of the site proposed, is reasonable.

The borough council intends to dispose of the existing town hall, and the borough council states that the money received from the sale would be applied in reduction of the loan for the new premises. The borough council states that it still intends to make use of the offices in Aybrook Street (where the electricity distribution staff is housed), as the members of this staff are not to be moved into the new town hall.

The estimated cost of the new buildings is 65,000*l.* and of the equipment 5,000*l.* The total cost of the new town hall as at present estimated, without including the cost of acquiring the outstanding leasehold interests for which negotiations are pending, is therefore 110,000*l.*, but this amount will not represent the net addition to the borough council's indebtedness, because the sale proceeds of the existing town hall, when sold, will be applied, as stated by the borough council, in reduction of the loan for the new premises. Subject to the borough council acquiring the outstanding leasehold interests

which extend beyond 1913, we see no objection to the loan being sanctioned for 60 years. We recommend—

That the borrowing by the St. Marylebone Metropolitan Borough Council of 40,000*l.* for acquisition of a site for a new town hall within the borough be sanctioned, such sum to be repaid by yearly, half-yearly or quarterly instalments of principal, or of principal and interest combined, of as nearly equal amounts as may be, within 60 years from the date of the borrowing.

FACTORY AND WORKSHOP.

SPECIAL EXCEPTION—LIMEWASHING, &c.

*Order of the Secretary of State, dated 1911,
granting Special Exception:—Limewashing, &c.*

IN pursuance of Section 1 (4) of the Factory and Workshop Act, 1901, I hereby grant to all factories and parts of factories which have been painted with at least two coats of a washable water paint, as defined below, and are repainted with at least one coat of such paint once in every three years, a special exception that the provisions in sub-section (3) of the said section with respect to limewashing shall not apply thereto. Provided—

1. That the paint shall be washed at least once in every fourteen months;

2. That the name of the paint used and the name and address of the makers of the paint, together with a certificate, in the form shown in the schedule hereto, from the makers of the paint, and the date of the original painting and of each washing and repainting, shall be entered in or attached to the General Register;

3. That nothing in this Order shall be taken to affect the obligation of keeping the factory in a cleanly state, as prescribed by subsection (1) of the said section;

4. That if it appear to an inspector that any part of a factory to which the exception applies is not in a cleanly state, he may, by written notice, require the occupier to lime-wash, wash or paint the same; and in the event of the occupier failing to comply with such requisition within two months from the date of the notice, the special exception shall cease to apply to such part of a factory.

In this Order a washable water paint means a washable paint which when finished for use contains—

1. At least half its weight of solid pigment containing not less than twenty-five parts by weight of zinc sulphide as zinc white (lithopone) in each hundred parts by weight of solid pigment; and

2. At least ten parts by weight of oil and varnish to each hundred parts by weight of solid pigment.

One of his Majesty's Principal

Home Office, Whitehall, Secretaries of State.
, 1911.

Schedule.

CERTIFICATE.

It is hereby certified that the washable water paint made by me/us and known as _____ will when finished for use in accordance with the directions given below (on the label attached to each tin) comply with the definition of washable water paint in the Order of the Secretary of State, dated _____

(Date) (Signature)

THE Mersey Docks and Harbour Board have adopted a recommendation to provide 40 per cent. additional accommodation for the storage of wool at the existing wool warehouses, which were erected fifteen years ago.

THE Ashton-under-Lyne, Stalybridge and Dukinfield Joint Water Board have decided to instal thirty-three mechanical filters for purifying their water supply, and we learn that the order has been placed with Messrs Mather & Platt, Ltd., of Manchester. This Company has thus secured the largest contract ever placed in this country for mechanical filters.

THE Sunderland Education Committee recommend the Town Council to carry out a scheme, at a cost of 74,258*l.*, for the reconstruction and extension of the Bede Collegiate (Secondary) School, and providing temporary premises. The present premises are considered insufficient and unsuitable by the Board of Education's Inspectors, and there is a possibility that the Board will withdraw the grant of 4,000*l.* yearly if the premises are not improved. The scheme provides land for building development, and a playing field, and was selected from seven propositions.

THE ADMINISTRATIVE ASPECT OF WATER CONSERVANCY.*

IN introducing the subject the author pointed out that during a period of over forty years there had been a steady output of papers, articles and reports of Royal Commissions and Select Committees of one or both Houses of Parliament, all urging the development of some system of conservancy and the creation of a number of local authorities, acting under the direction of a central authority. But the subject did not appear to have received that attention from Parliament which its importance merited, and which the weightiness of several of its recommendations should have ensured for it, doubtless because, as the author pointed out, the subject was too complex and technical to appeal to the general public, and even amongst those who recognised the necessity of doing something, there was a fear that any alteration in the existing order of things might lead to increased taxation, little thinking that the cost of dispute under a continuance of the existing condition of things far outweighed any possible expenditure on systematisation; whilst others found themselves unable to draft a scheme which whilst being comprehensive and efficient should not be too costly.

The author urged that no general scheme should be engaged in until systematic data had been collected by a special hydrographic survey staff, and when subsequently the local authorities were created to administer the several river basins, the authorising Acts should be general, so that each rivers board comprising all the varied interests of the basin might be left a fairly free hand to administer their area to its best advantage, having regard to its own peculiar interests.

He then dealt in detail with the extreme divergence in the characteristics of river basins in point of size, geological structure, distribution of population, the number of local authorities, the rateable value and the economic and industrial importance of each basin, and pointed out that the characteristics were so diverse that no truly efficient scheme could be formulated which was not sufficiently elastic to meet the varied conditions.

The author next reviewed the various schemes for grouping river basins proposed by the Royal Commission on Rivers Pollution Prevention, and by Messrs. Ansted, de Rance and himself, and gave tables showing the population, rateable value and number of local authorities in each of the twelve groups of his own suggestion.

He then attempted an estimation of the value of the public water interests in the country, and outlined an administrative system comprising a central authority controlled by a Minister of Water Supply, supervising twelve main drainage boards, each in charge of an area comprising a group of basins, and rivers boards each in charge of a river basin; he showed that such proposals were by no means revolutionary, and need not develop into anything more bureaucratic than the existing system of local authorities responsible to the Local Government Board; but he suggested as a preliminary step that a survey staff should be at once organised to collect the necessary data, upon which Parliament might deliberate when it took in hand the creation of the new administrative system. He pointed out from reference to similar organisations in other countries that the cost of maintaining such a body need not be excessive, and suggested that such funds as were required in the first instance might be obtained by the Local Government Board from the Development Fund.

The paper was illustrated with numerous tables and a map.

DRY ROT AT AN ASYLUM.

A REPORT has been prepared for the York City Council on the question of the defective flooring of Naburn Asylum, on the ground floor, the woodwork of which had indicated the existence of "dry rot" to such an extent as to necessitate the relaying of some of the floors. Attention was called to the matter a short time ago, and as it was very necessary at once to remedy the defective parts then pointed out, directions were given to the city surveyor (Mr. Spurr) to proceed with the work. Since then other defects were discovered, and both the City Surveyor and the engineer to the Ouse and Foss Navigation (Mr. Creer) were requested to present independent reports, and particularly as to the cause of the defects. These reports have now been submitted.

The report of the City Surveyor states that the total remaining area of floors laid on the particular system that is

* Abstract of a Paper by Mr. William Ralph Baldwin-Wiseman, M.Sc., A.M.Inst.C.E., F.G.S., F.R.Met.S., read at a meeting of the Society of Engineers on April 3.

proving unsatisfactory amounts to 2,665 square yards. Some floors have already been re-laid with wood blocks, the area being 357 yards. The floors that are affected, and which it would be advisable to deal with at once, are 761 yards in area. The cost of relaying the floors will amount to about 300*l.* if laid with wood blocks, and about 260*l.* if ventilated floors are adopted. There are also about twelve single rooms that should be re-laid on the solid system, the area being 120 yards sup. and the estimated cost 52*l.* 10*s.* 0*d.*

"Those floors which are now apparently sound, I think," says Mr. Spurr, "might be left for the present, and it is possible they may last for some years to come, but their useful life I cannot estimate. Their total area is 1,794 yards, and the probable cost of re-laying (if found necessary) on the solid system will be about 775*l.*, or if single room floors laid solid, and others ventilated, 682*l.* The cost of the solid floors will be materially reduced if it is found possible to remove the joists without disturbing the present concrete, and a further saving could be effected if it were possible to utilise patients' labour."

In the floors dealt with it was found that rot had first commenced in the joists bedded in concrete, the rot afterwards spreading to the boards above. Moist heat was, in his opinion, the cause of the trouble, the moisture coming from the ground under the concrete and the heat from the steam-pipe subway, of which there was a very considerable length all laid either directly under the floors, or immediately adjoining them.

In his separate report Mr. Creer states that in considering the class of floor best suited to the requirements of a public institution of this character, one had to bear in mind that a "solid floor" would be more hygienic than one bearing joists and floor boards, on account of the facilities provided by the latter for rats and other vermin. Accordingly he decided upon a type that was economical and, in his opinion, suitable, and costing from 5*s.* 6*d.* to 6*s.* a square yard, including concrete foundation. The various classes of solid wood block floors from 11*s.* 3*d.* upwards he considered would be an extravagance that was not justified, especially as the site was a dry one.

The specification for the work and the close inspection both of labour and material were such as to ensure good work, and to the best of his knowledge was satisfactorily carried out. It was not foreseen that the heated air in the subways would be the means of transmitting heat to the ground behind the subway walls. There could be no doubt but that the ground had been so heated, and that this had in turn been transmitted to the concrete and joists, and in the absence of ventilation (which was not necessary in a solid floor), had set up dry rot. It was a piece of sheer ill-luck and would not, he felt certain, have occurred under any other conditions, minus the moist heat from subways. He recommended the removal of the whole of the affected timber and all timber in which rot had not commenced coated with a solution of sulphate of copper, more especially in proximity to affected timber. There should be no delay in adopting remedial measures, as the fungus would travel along brickwork or concrete in order to get to clean unaffected timber. In concluding his report, Mr. Creer says:—"I need hardly say how disappointed I am at this unexpected and unfortunate development. It was entirely unforeseen. In the absence of any premonition of this mischief, I should have considered it a piece of useless extravagance to put down wood block flooring over the area where the cheaper floor has been adopted."

The Asylums Committee have decided to proceed with the work of remedying the defects already existing in the floors as suggested in the report of the City Surveyor.

TRADE NOTES.

The Coatstone Decoration Co., of 77 Mortimer Street, Regent Street, W., have been awarded the Grand Prix and Gold Medal for "Coatstone" liquid stone decoration at this year's International Exhibition, Paris, held in March, 1911.

MESSRS. FARROW & JACKSON, LTD., 16 Great Tower Street, London, E.C., carried out the contract for the wine bins in the new premises of the Royal Automobile Club in Pall Mall, W.

WE understand that Messrs. Mather & Platt, Ltd., the well-known electrical engineers of Manchester, have despatched to India Mr. Coubrough as a representative of their firm in connection with electrical equipments. Mr. Coubrough is discussing with various firms in India, especially in Bombay and Calcutta, the possibility of electrifying

their plant or of installing electrical power, and perhaps even putting down plant to generate their own electric power and light.

VARIETIES.

MR. A. MARSHALL MACKENZIE, A.R.S.A., has prepared tentative plans for the extension of the Aberdeen Art Gallery at the west end. The cost is estimated at about 9,000*l.*

MR. ROWLAND LLOYD JONES, county architect, Carnarvon, has been appointed by the Carnarvon Board of Guardians to prepare plans for the proposed hospital in connection with the Workhouse.

A GRANT of 300*l.* is to be made to the Senate of the University of London by the London County Council for the year ending March 31, 1912, in respect of courses in heating and ventilating engineering at University College.

MESSRS. FRANK MATCHAM & Co. have prepared plans for the proposed Empire Theatre of Varieties at Chatham, which is to be erected on the site of the present Gaiety Theatre. Seating accommodation will be provided for 2,050 people.

The General Purposes Committee of the Torquay Town Council recommend the enlargement of the assembly hall of the new municipal buildings. The architect's previous estimate of the additional cost—from 8,000*l.* to 10,000*l.*—has been reduced from 6,000*l.* to 7,000*l.*

THE Education Committee of the London County Council recommend (a) That the Randall Place School (Greenwich) be enlarged by about 250 places. (b) That a central school for about 260 girls be provided at Royal Hill (Greenwich). (c) That, if required by the Board of Education, public notices be given of the Council's intention to provide about 510 additional public elementary school places in West Greenwich, in lieu of the 400 places which have already been advertised, by the enlargement of the Randall Place school (Greenwich) by about 250 places and by the erection of a central school for about 260 girls at Royal Hill (Greenwich).

MR. W. WILLIAMSON, the Bradford city architect, last week submitted to the Health Committee of the Corporation a scheme for the erection of a sanatorium for consumptives. The proposed site is near Grassington, and 800 feet above sea level. Fifty beds are provided for by the scheme at a cost of 16,500*l.*, or, as an alternative, 66 beds at a cost of 17,680*l.* The buildings are arranged in the form of a crescent facing south, with protection from the easterly and westerly winds. The plans are to be submitted to the City Council.

An ordinary meeting of the Council of the Royal Institute of the Architects of Ireland was held on the 4th inst. at No. 31 South Frederick Street. The President, Mr. A. E. Murray, A.R.H.A., F.R.I.B.A., was in the chair, and there were also present:—Messrs. W. Kaye-Parry, F. G. Hicks, Lucius O'Callaghan, C. H. Ashworth, G. P. Sheridan, C. J. MacCarthy, R. Caulfield Orpen, A. G. C. Millar, J. H. Webb, H. Allberry, and C. A. Owen, Hon. Secretary. A subscription to the Architects' Benevolent Fund was sanctioned. The report of the Examination Committee was again under consideration, and, with a small amendment, was passed. The Committee was asked to prepare a list of examiners and to suggest a date for the first examination. A report from the Arts Committee, with reference to the portraits of past Presidents and Vice-Presidents was adopted. The by-law as to the admission for members was under review.

THE problem "Where to Spend Easter" will present itself to many, and as Easter is the first holiday and is this year fortunately late, thousands will take advantage of the cessation from business for a brief holiday. In the days of quick travel distance is no object, and we notice that the Great Central Railway have been specially careful in their arrangements to shorten the journey of the long distance traveller by bringing his destination as near to London as possible in point of time. The special holiday programme issued by the Great Central Company contains an almost unlimited choice of resorts suitable for all tastes and requirements. Express corridor trains equipped with restaurant cars leave Marylebone on Thursday, April 13, at 8.45, 10.0 A.M., 12.10 P.M., 3.15, 3.20, 4.30, 6.20, 10.0 P.M. and 12.30 midnight, and special trains will also be run on Good Friday, Saturday, Sunday and Monday (Bank Holiday). Other attractive features of the programme are the issue of week-end tickets, frequent day and half-day facilities to the picturesque villages of the Chiltern Hills and Vale of Aylesbury. Special low fares are announced for walkers and cyclists available from Marylebone by any train on any day, and from Saturday to Monday. Copies may be obtained free of charge at Marylebone Station, Great Central Town Offices and Agencies, or by post from Publicity Office, 216 Marylebone Road, N.W.

THE
Architect and Contract Reporter.

FRIDAY, APRIL 14, 1911.

Published weekly, subscription 19s. per annum for Great Britain, and for Colonial and Foreign subscriptions £1 6s. 6d. All business communications to the Managing Director,

P. A. GILBERT WOOD,

Publishing Offices, 6-11 Imperial Buildings, Ludgate Circus, London, England.

Telephone No. 4725 Holborn.

Branch Offices at 43 OLD QUEEN STREET, S.W., Messrs. W. HAY FIELDING & CO. being the representatives for all business purposes.

The Birmingham Offices are at 102 COLMORE ROW.

. Entered in the United States of America as second-class matter.

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The International News Co., 5 Bream's Buildings, Chancery Lane, London, England, and New York.

AGENTS FOR CANADA:

Messrs. WM. DAWSON & SONS, Ltd., 91 Church Street, Toronto, to whom all correspondence for Subscription and Advertising Rates should be made.

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NOTICE TO ADVERTISERS.

Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

Special Position Spaces.—Unless ordered for weekly insertions the Proprietors cannot guarantee particular dates.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit the insertion of lengthy communications.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

. As great disappointment is frequently expressed at the nonappearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

ARGENTINE.—April 20.—A competition of plans for a hospital and school of medicine, to be erected at Rosario in celebration of the Argentine Centenary at a cost of about 149,000l. Prizes of 1,050l., 700l. and 440l. will be awarded. A copy of the conditions, &c., may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, London, E.C., where also a limited number of copies are available for distribution. Plans must be sent to the "Secretaria de la Comisión Pro-Hospital é Instituto de Enseñanza Médica del Centenario, Calle Córdoba 1230," Rosario.

ATHENS.—Sept. 25.—An international competition of plans is invited by the Greek Ministry of the Interior (Public Works) for the erection of a Court of Justice at Athens. The cost of the building must not exceed 160,000l. A first prize of 800l., and a second prize of 320l. will be awarded. The Greek Official Gazette, containing particulars (in Greek and in French) may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

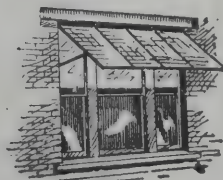
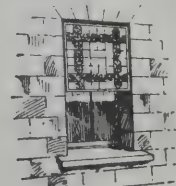
BRADFORD.—June 1.—The Board of Management of the Bradford Infirmary invite plans with estimates for a new infirmary in Duckworth Lane. Mr. Keith D. Young, F.R.I.B.A., will act as assessor. Deposit 3l. 3s., which will be refunded on receipt of a bona-fide design or if block plan, instructions, &c., are returned within a month after receipt of replies to competitors' questions. The Secretary Superintendent of the Royal Infirmary, Bradford. (For further particulars see advertisement, January 13.)

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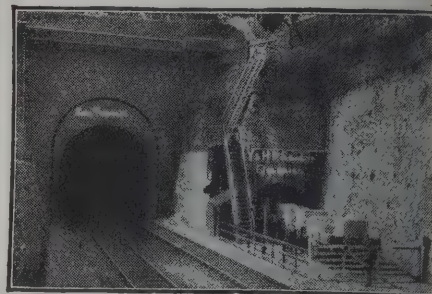
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BULGARIA.—April 30.—An international competition will be held of plans for a building which it is proposed to erect in Sofia for State and municipal offices. The following four prizes will be given, viz., 280*l.*, 120*l.*, 80*l.*, and 4*l.* Applications must be sent to the "Kreis-Permanenz-Ausschuss," Sofia.

CHESTERFIELD.—May 15.—The Standing Joint Committee for Derbyshire invite architects practising in the county to submit designs for a Court-house and lock-up to cost 8,000*l.* Mr. F. Baggallay, F.R.I.B.A., will act as assessor. Deposit 3*l.* 3*s.* Apply to Mr. G. C. Copstick, L.R.I.B.A., County Offices, Derby.

DEVIZES.—May 10.—The Committee of the Devizes Cottage Hospital invite competitive designs for providing a new six-bed ward at, and making a general re-arrangement of, their existing hospital (16 beds) at a maximum cost of from 1,200*l.* to 1,500*l.* Deposit 10*s.* 6*d.* Conditions of competition and particulars of the buildings required will be supplied to intending competitors by Mr. E. Thorp, honorary secretary, Devizes.

LIVERPOOL.—The Finance Committee of the City Council last week, after considering plans prepared by the City Surveyor, Mr. Shelmerdine, and the Baths Superintendent and Engineer, for proposed baths on a portion of the old George's Dock site, decided to invite designs from architects for the elevations. Three premiums of one hundred, fifty and twenty-five guineas will be offered for the designs adjudged to be first, second and third in the order of merit. It is understood that the estimated cost of the scheme is about 70,000*l.*

MANCHESTER.—May 1.—The Corporation invite designs for a Library and Art Gallery upon the Piccadilly site in the centre of the city. The Preliminary Competition closes May 1. The authors of ten selected designs will compete in the Final Competition. Mr. Reginald Blomfield, A.R.A., will act as assessor, in connection with the city architect. Apply for particulars to Mr. Thomas Hudson, Town Clerk, Town Hall, Manchester.

MANCHESTER.—The Corporation of Manchester having last year invited plans for the suggested laying out of their Blackley estate, have awarded the premiums as follows:—(1) 150*l.*, Messrs. Cooper & Slater, Blackburn; (2) 100*l.*, Mr. James Carruthers, I.A., Glasgow; and (3) 50*l.*, Messrs. Salmon & Son & Gillespie, F.R.I.B.A., Glasgow. The plans become the property of the Corporation of Manchester, as it was announced in the conditions that it was not intended to engage the author of any design to carry out the work.

NEWTON ABBOT.—April 18.—The Governors Seale-Hayne College invite architects to submit designs and estimates for the college. A block plan of the site and other particulars, together with the conditions of the competition, may be obtained from the Principal, upon receipt of a deposit of 1*l.* 1*s.* 0*d.*, which will be returned to each competitor who submits a bona-fide design or who returns the plan and printed particulars within a fortnight after receiving the same. Mr. Chas. Steward Smith, J.P., F.R.I.B.A., of 164 Friar Street, Reading, will act as assessor. Premiums of 100*l.*, 50*l.*, and 30*l.* are offered to the authors of the first three designs. Applications, addressed to Mr. B. N. Wale, Principal, Seale-Hayne College, Newton Abbot, Devon, must be received not later than April 18.

STOCKPORT.—April 22.—Architects desirous of entering a limited competition for the designs of the Police Station and Courts which the Corporation propose to erect are invited to forward their names and addresses, with particulars of their qualifications and experience in the erection of similar buildings, on or before Saturday, April 22, to Mr. Robert Hyde, Town Clerk, Town Hall, Stockport.

WALES.—May 5.—The Corporation of Swansea invite architects to submit designs and estimates for the Castle Street improvement. Deposit 1*l.* 1*s.*, which will be refunded on receipt of a bona-fide design or if block plan and particulars are returned within a fortnight after receipt. The architect appointed to prepare the working drawings will be paid not more than 250*l.*, and a premium of 50*l.* will be paid for the second design. Mr. S. S. Reay, F.R.I.B.A., will act as assessor. Apply to the Town Clerk, Guildhall, Swansea.

CONTRACTS OPEN.

AINTREE.—April 19.—For the construction of bridges over Aintree Lane and the river Alt, near Fazakerley Junction, Lancs., for the Lancashire and Yorkshire Railway Co. The Engineer's Office, Hunt's Bank, Manchester.

APPERLEY BRIDGE.—For the various works required in the extension of Valley Mills, Apperley Bridge, near Bradford, for Messrs. G. Garnett & Son, Ltd. Send names and addresses to Mr. G. F. Bowman, architect, 5 Greek Street, Leeds.

ASHTON-UNDER-LYNE.—April 24.—For erection of Groby Council school, to accommodate 1,200 children. Deposit 3*l.* 3*s.* Mr. E. Woodhouse, F.R.I.B.A., 59 Warrington Street, Ashton-under-Lyne, and 88 Mosley Street, Manchester.

BIRKENHEAD.—April 22.—For carrying out alterations to the Central Fire Station, Whetstone Lane. Deposit 5*s.* Mr. Charles Brownridge, M.I.C.E., borough engineer and surveyor, Town Hall, Birkenhead.

BOLTON-BY-BOWLAND.—April 24.—For erection of two cottages, additions to two houses, and a stable and cow shippon on the Bolton Hall Estate. The Coffee House, Bolton-by-Bowland, Yorks.

BOSTON.—April 25.—For repairs and alterations to the chemical manure works, for Hubbert's Bridge, belonging to Messrs. W. G. Hammond & Co., Ltd. Mr. W. Willcock, secretary, 2 Main Ridge, Boston, Lincs.

BOURNE.—For erection of six cottages at Little Bytham. The Surveyor's Office, West Street, Bourne, Lincs.

BRIDLINGTON.—April 20.—For erection of lavatories and shelter on the east side of the Marine Drive. Mr. E. R. Matthews, borough surveyor, Bridlington.

CARLISLE.—April 28.—For erection of disinfecting chambers at Fever Hospital or House of Recovery (whole tenders). Mr. J. W. Benwell, architect, 28 Lowther Street, Carlisle.

CARNFORTH (LANCS.).—April 19.—For the enlargement of Carnforth Post Office, for the Commissioners of H.M. Works and Public Buildings. The Postmaster at Carnforth Post Office and H.M. Office of Works, Storey's Gate, London, S.W.

CHESTER-LE-STREET.—April 21.—For additions (comprising a second court and new witnesses' room) to the county police station. Mr. W. Crozier, A.M.I.C.E., county architect and surveyor, Shire Hall, Durham.

CLEATOR.—April 15.—For erection of eighteen houses at Cleator, Cumberland, for Messrs. Ainsworth & Sons, Ltd. Send names by April 15 to Mr. J. S. Stout, architect, 36 Lowther Street, Whitehaven.

COALVILLE.—April 20.—For erection and completion of new reftort house, new purifier house, forming liquor tank, &c., at the Gasworks, Whitwick, for the Coalville Urban District Council. Mr. T. I. McCarthy, architect, Central Chambers, Coalville, Leics.

CRIGGLESTONE.—April 21.—The West Riding Education Committee invite whole or separate tenders for alterations at Newmillerdam Council school, Crigglestone, viz.:—Builder, joiner, plumber, painter, and asphalt. The Education Architect, County Hall, Wakefield. Send 1*l.* deposit to the West Riding Treasurer, County Hall, Wakefield.

DARTON.—For the various works in erection of the Darton Hotel, out-buildings, and boundary walls, Perkin Hill, Darton, near Barnsley. Send names and addresses to Messrs. Crawshaw & Wilkinson, architects, 13 Regent Street, Barnsley.

EARLSHEATON.—April 20.—For the various works required in alterations to St. Peter's Schools, Earlsheaton, Yorks. Messrs. Kirk, Sons & Ridgway, F.R.I.B.A., architects, surveyors and valuers, Market Place, Dewsbury.

EDINBURGH.—April 15.—For (1) roofing over part of the main avenue at Slaughterhouses and (2) roofing over area on the north side of the Cattle Market, Gorgie, for the Town Council. Mr. J. A. Williamson, A.R.I.B.A., City Chambers, Edinburgh.

EDINBURGH.—April 17.—For the reconstruction of the National Gallery of Scotland, for the Commissioners of H.M. Works and Public Buildings. Tenders are required for the whole work, and not for separate trades. Deposit 1*l.* 1*s.* H.M. Office of Works, 3 Parliament Square, Edinburgh.

EDINBURGH.—April 22.—For erection of two two-storey cottages for attendants at Dechmont village, Uphall, for the Edinburgh District Board of Lunacy. Messrs. Peter Lawrence & Co., surveyors, 50a Frederick Street, Edinburgh.

ELDON.—April 19.—For the works required in erection of a church hall and Sunday school premises at Eldon, near Bishop Auckland. Send names to Mr. W. A. Kellett, architect, Bishop Auckland.

EPSOM.—April 18.—For erection of conveniences at the recreation ground, Alexandra Road. Mr. E. R. Capon, surveyor, Bromley Hurst, Church Street, Epsom.

ERITH.—April 21.—For erection of a pavilion at the playing field of the Erith County School, Kent. Mr. A. T. Flux, Education Offices, Belvedere, Kent.

FARTOWN.—April 21.—For erection of a house, Yew Street and Percy Street, Fartown, Yorks. Mr. N. Culley, A.R.I.B.A., architect, 13 John William Street, Huddersfield.

GRASMERE.—April 20.—For the erection of two garages, brush-up, waiting, and store rooms, at the Prince of Wales Hotel, Grasmere, Westmoreland. Mr. S. Shaw, F.R.I.B.A., architect, Kendal.

HALIFAX.—April 22.—For works required in erection of additions to West Croft Mills. Messrs. C. F. L. Horsfall & Son, architects, Lord Street Chambers, Halifax.

HORNCHURCH.—April 26.—For the erection of an infants' school and band and drill room at their cottage homes, Hornchurch, near Romford, Essex, for the Guardians of Saint Leonard, Shoreditch. Mr. F. J. Smith, F.R.I.B.A., architect, Parliament Mansions, Victoria Street, S.W.

HUDDERSFIELD.—April 19.—For erection of additions to branch store at Marsh, for the Huddersfield Industrial Society, Ltd. Mr. J. Berry, architect and surveyor, 3 Market Place, Huddersfield.

IPSWICH.—April 15.—For proposed additions to the Freemasons' Hall, Soane Street. Send names by April 15 to Mr. G. H. B. Gould, A.R.I.B.A., 9 Tower Street, Ipswich.

IRELAND.—April 19.—For building fifty-four cottages, for the Kinsale Rural District Council. Mr. John Murphy, clerk, Council Office, Kinsale Workhouse.

IRELAND.—April 20.—For erection of one block of two dwellings at Aranmore Island lighthouse, Burtonport, Co. Donegal, for the Commissioners of Irish Lights. Deposit 2l. 2s. Harbour Office, Londonderry; Harbour Engineer's Office, Belfast; and the Engineer's Office, Irish Lights Office, Carlisle Buildings, Dublin.

IRELAND.—April 24.—For an addition to the Parcels Offices at Dundalk Station, for the Great Northern Railway Co. (Ireland). Deposit 1l. The Chief Engineer's Office, Amiens Street Terminus, Dublin, and the District Engineer's Office, Belfast.

IRELAND.—April 24.—For the erection of County Council Offices at Navan, Co. Meath. Deposit 1l. 1s. Mr. J. J. Inglis, architect, 5 Nassau Street, Dublin.

KEARSLEY.—April 26.—For the erection of a new elementary school at Kearsley for 504 children, with accommodation for manual instruction, cookery and laundry work. Deposit 2l. Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

KING'S LYNN.—For erection of a single residence in St. Nicholas Street. Mr. L. F. Eagleton, architect and surveyor, King Street, King's Lynn.

LEISTON.—May 17.—For erection of thirty-two houses for the working classes at Valley Road, Leiston, Suffolk, for the Urban District Council. Send names and 1l. 1s. deposit by April 19 to Mr. J. A. Scheuermann, architect, Northgate Street, Ipswich.

LISKEARD.—April 18.—For erection of a choir vestry at Liskeard Church. Mr. J. Sansom, F.R.I.B.A., Liskeard, Cornwall.

LISKEARD.—For new post office to be erected in Windsor Place. Deposit 2l. 2s. Mr. E. W. Lister, architect and surveyor, The Parade, Liskeard.

LONDON.—May 4.—For the erection of a committee-room at the Workhouse, Swaffield Road, Wandsworth, S.W. Deposit 1l. Mr. F. W. Piper, clerk, Guardians' Office, St. John's Hill, Wandsworth, S.W.

LONDON.—April 22.—The Corporation of London invite tenders from house-breakers and others for the demolition of certain premises in Bishopsgate, Pindar Street, &c., City, and for taking fixtures, fittings, machinery, &c., therein, together with the loose effects. Deposit 1l. The Office of the Engineer, Guildhall, E.C.

LUTON.—April 19.—For erection of an awning over loading-dock at Luton, for the Midland Railway Co. The Engineer's Office, Midland Railway, Derby.

NEWARK.—April 18.—For erection of buildings in Barnby Road for the Isolation Hospital. The Surveyor's Office, Town Hall, Newark.

NEWCASTLE-ON-TYNE.—April 19.—For erection of branch Post Office, Heaton. The Postmaster at Newcastle-on-Tyne.

NEWTON ABBOT.—The Governors of Seale-Hayne College invite architects to make application by the 18th inst. for the particulars of a competition for the college. For further details see under "Competitions Open."

READING.—April 27.—For the execution of the works necessary in adaptation of certain existing buildings at the corner of Valpy Street and Forbury Road for the purposes of a justices' room, police station and quarter and petty sessions house, and for the erection of new buildings for cells and an inspector's house in connection therewith, for the Town Council. Send in names to Mr. S. Slingsby Stallwood, F.S.A., architect, 27 Market Place, and 2l. 2s. to the Borough Accountant, Valpy Street, Reading.

SALFORD.—April 24.—For erecting new infants' school in Nashville Street. Deposit 1l. 1s. Messrs. Woodhouse, Corbett & Dean, 100 King Street, Manchester.

SCOTLAND.—April 17.—The Commissioners of H.M. Works and Public Buildings are prepared to receive tenders for the reconstruction of the National Gallery of Scotland. Tenders are required for the whole work, and not for separate trades. Deposit 1l. 1s. H.M. Office of Works, 3 Parliament Square, Edinburgh.

SEAFORD.—May 1.—For erection of a refuse destructor house and chimney at the Sewage Pumping Station, Brooklyn Road, together with the inclusion in the contract of the supply and erection by Messrs. Meldrum Bros., Ltd., of a two-cell refuse destructor and boiler, and works incidental thereto. Messrs. Pollard & Tingle, engineers, 31 Old Queen Street, Westminster, or Mr. W. H. Pawson, clerk, 3 Clinton Place, Seaford.

STROUD.—April 18.—For the provision and erection of a refuse destructor and other works connected therewith. Deposit 1l. 1s. Mr. G. P. Milnes, A.M.I.C.E., engineer, Stroud.

THORNBURY.—April 21.—For whole or separate trades required in new church at Thornbury, Bradford. Messrs. Wright & Son, surveyors, Lancaster, and Messrs. Austin & Paley, architects, Lancaster.

TONBRIDGE (KENT).—April 21.—For the following section of sewage disposal works, for the Tonbridge Urban District Council:—Contract No. 1, additions and alteration to the pumping station, construction of new and additions to old tanks, new percolating filters, &c. Deposit 5l. Mr. W. Laurence Bradley, engineer, The Castle, Tonbridge, Kent.

WALES.—For building a factory at Ely, Cardiff, for Messrs. A. Lougher & Son, bacon-curers and jam and pickle manufacturers. Mr. J. H. Thomas, architect, Pentwyn, Llandaff.

WALES.—For alterations and additions to Park Church, Llanelly. Deposit 2l. 2s. Messrs. J. Davies & Son, M.S.A., Colwell House, Llanelly, and Mr. Glendinning Moxham, F.R.I.B.A., 18 Castle Street, Swansea.

WALES.—April 15.—For erection of semi-detached villas at Edeyrn, near Nevin. Captain Williams, Angorfa, Edeyrn.

WALES.—April 16.—For altering shop premises at No. 2 Talbot Street, Maesteg, for Messrs. Price Bros. Messrs. Moxham, F.R.I.B.A., 18 Castle Street, Swansea.

WALES.—April 17.—For erection of a pair of workmen's cottages, at Ewenny, Bridgend, for Colonel Turbervill. Mr. P. J. Thomas, architect, Bridgend.

WALES.—April 17.—For erection of a villa at Cil-y-Cwm Road, Llandovery. Mr. T. Roderick, architect, Ashbrook House, Aberdare, or Messrs. T. & W. Williams, London House, Llandovery.

WALES.—April 19.—For erection and completion of a drill hall, lecture room, armoury, caretakers' quarters, &c., at Fishguard, for the Pembrokehire Territorial Force Association. Deposit 1l. 1s. The Headquarters of the No. 3 Company, Pembroke R.G.A. (T.F.), Brodog Terrace, Fishguard.

WALES.—April 19.—For erection of a stable for sick horses at the Corporation Cleansing Depot, Trade Street, Cardiff. The City Engineer's Office, City Hall, Cardiff.

WALES.—April 19.—For the following works, for the Glamorgan County Council, viz.:—(1) New mixed department of the Council school at Clyne, near Neath; (2) cloak-rooms at Rhigos Council school; (3) pulling down and re-erecting offices at Ynistawe Council school, Swansea Valley; (4) alterations to the Trebanos mixed Council school, Swansea Valley; (5) additions to Ffaldau boys' Council school, Pontycymmer; (6) new boys' Council school at Caerphilly; (7) new Council school at Llangan, near Bridgend; (8) tar-paving the playgrounds of certain of the Council schools in both the eastern and western divisions of the county. The County Council Offices, Westgate Street, Cardiff.

WINDSOR.—April 14.—For the execution of works required to be done in alterations at the workhouse at Old Windsor. Messrs. Edgington & Spink, architects, 52 High Street, Windsor.

TENDERS.

FOWLMERE.

For erection of cemetery chapel at Fowlmere, Cambridgeshire.

Mr. S. FRENCH, architect, Cambridge.

Willmott & Sons	£335	0	0
Hinkins & Sons	320	17	1
Mortlock	313	16	0
Melton	302	8	2
Bell & Sons	300	0	0
Fennett & Sons	296	0	0
Gimson & Co.	293	0	0
Booke	292	0	0
Ward & Sons	290	4	0
Heath	289	10	0
Taylor	287	10	5
Chuck	281	0	0
Brignell	280	0	0
Gates & Son	274	10	0
Jacklin & Co.	274	0	0
Clark & Sons	274	0	0
JUDE, Harston (accepted)	262	4	0

LITTLEHAMPTON.

For building and completing a fire engine house in Selborne Road. Mr. H. HOWARD, F.S.I., surveyor, Littlehampton.

Smith	£239	0	0
Hayward	233	0	0
Gray	211	5	0
LINFIELD & SONS, Littlehampton (accepted)	200	0	0

LONDON.

For metal shop front at 31 Old Kent Road. Mr. T. JAY EVANS, architect and surveyor, 61 Munster Road, Fulham, S.W.

Parkinson & Son	£369	5	0
Sage & Co.	365	0	0
Pollard & Co.	309	0	0
Haskins & Bros.	298	15	0

For the supply and erection of the internal fencing required at Ruskin Park, for the L.C.C.

Stone	£196	13	10
Bayliss, Jones & Bayliss	160	0	0
Faulkner & Sons	154	0	0
Palmer & Co.	137	6	0
Miller & Sons	126	0	0
Hill & Smith	119	8	0
John Elwell, Birmingham (recommended)	108	0	0
Estimate of the chief officer of the parks department, 113/.			

For the formation of a new street from Smith Square to Tufton Street, Westminster, for the L.C.C.

Muirhead & Co.	£2,683	19	10
Griffiths & Co.	2,553	2	9
Dickson	2,250	19	9
Elliott & Co.	2,198	0	6
Paterson	1,955	17	0
Mowlem & Co.	1,951	0	0
Wheeler & Co., Blackfriars Road, S.E. (recommended)	1,802	2	1
Estimate of the chief engineer	2,038	0	0

For the partial reconstruction of the bridge carrying Mildmay Park over the North London Railway at Mildmay Park Station, in connection with the reconstruction, for electric traction, of the horse tramways, for the L.C.C.

Jackson	£2,801	16	1
Elliott & Co.	2,547	18	3
Pedrette	2,520	16	6
Dickson	2,511	8	0
Rowlingsons & Co.	2,339	6	9
Dick, Kerr & Co.	2,258	9	10
Muirhead & Co., Queen Victoria Street (recommended)	2,238	3	0
Chief engineer's estimate	3,130	12	9

For the paving and sewer, &c., works required in connection with the widening of Belvedere Road north of Guildford Street, Lambeth, for the L.C.C.

The Westminster Construction Co.	£5,410	9	8
Woodham & Sons	4,285	3	3
Paterson	4,113	19	10
Wheeler & Co., Ltd.	4,052	11	6
Mowlem & Co., Grosvenor Road, S.W. (recommended)	4,015	0	0
Chief Engineer's estimate	4,177	0	6

LONDON—continued.

For adapting the Belvedere Place school, Southwark, S.E., as a trade school for girls, for the L.C.C.

Electric Lighting Work.

Lawrance & Sons	£462	13	9
Mann, Egerton & Co.	460	0	0
Tredegar & Co.	432	0	0
Harland, Bowden & Co.	423	0	0
Newbald	396	0	0
Barlow Bros. & Co.	382	16	0
Hawkins & Sons	369	0	0
Johnson & Phillips	357	0	0
Tilley Bros.	347	17	0
Weston & Sons, 153 Fenchurch Street (recommended)	275	0	0
Chief Engineer's estimate	332	0	0

Building Work.

Holloway Bros. (London)	£4,248	0	0
Lawrence & Son	4,244	0	0
Wall	4,225	9	0
Patman & Fotheringham	4,163	0	0
F. & H. F. Higgs	4,163	0	0
Lawrance & Sons	4,162	0	0
Downs	4,093	0	0
H. L. Holloway	4,000	0	0
Barker & Co.	3,953	0	0
J. & C. Bowyer	3,783	0	0
Gathercole Bros., Norbury (recommended)	3,690	0	0
Chief Engineer's estimate	3,987	0	0

For making about 1,130 feet of roads on the Connaught Garden Estate, Custom House, E. Messrs. BELFRAGE & SAVILLE, architects and surveyors, 27 Chancery Lane, W.C.

Moss & Son	£1,361	0	0
Kavanagh & Co.	1,330	16	6
Gibbons	1,131	0	0
Adams	1,123	0	0
FARROW, Norfolk Street, Strand (accepted)	1,100	0	0

For the erection of store at Greig's Wharf, East Greenwich. Mr. A. C. RUSSELL, M.S.A., architect, 13 Basinghall Street, E.C.

Shorter & Co.	£607	10	0
Mills & Son	589	0	0
Marsland & Son	581	0	0
H. GROVES, Greenwich (accepted)	520	0	0

NEWCASTLE-ON-TYNE.

For twenty-five cottages on the East Denton Holdings, for the Small Holdings Committee. The City Estate Surveyor, Newcastle-on-Tyne.

Fenwick & Co.	£9,760	0	0
Ovens	8,824	5	4
Kirk & Brown	8,814	19	6
George & Son	8,600	0	0
Franklin & Son	6,563	18	11
Haswell & Waugh	6,465	0	0
Oake & Co.	6,436	12	6
R. & A. P. Tait	6,312	15	0
Craven	6,064	0	0
Harbottle	6,050	0	0
Exors. of E. Weatherley	5,995	0	0
Douglass	5,978	0	0
Carruthers	5,754	10	1
DOUGLASS, Morpeth (accepted)	5,375	10	0

WALES.

For erection of a caretaker's house at Gilfach. Mr. JAS. P. JONES, F.I.S.E., Hengoed, via Cardiff.

Williams	£586	18	0
F. & R. Lewis	475	16	8
Bambury	475	0	0
Jones	453	0	0
Vodden	415	0	0
Cox	403	0	0
Davies & Co.	399	10	0
LEE, Hengoed (accepted)	389	15	0

For the erection and completion of footings to the new additions, Caerphilly Temporary School, for the Glamorgan Education Committee. Mr. D. PUGH-JONES, F.S.I., county architect, Cardiff.

Howells	£300	0	0
Robbins	246	4	6
Davies	223	18	0
Williams	217	0	0

WALES—*continued*.

For the erection of a temporary school at Maindy, near Cardiff, for the Glamorgan Education Committee. Mr. D. PUGH-JONES, F.S.I., county architect, Cardiff.

Banbury	£906	0	0
Humphries	857	0	0
Rowell & Co.	750	0	0
DAVIES (<i>accepted</i>)	735	0	0
Ginger Lee & Co.	715	16	0
Harbrow	713	0	0
Harrison & Co.	695	0	0
Maggs & Co.	600	10	0

For footings for temporary school at Maindy, near Cardiff, for the Glamorgan Education Committee. Mr. D. PUGH-JONES, county architect, Cardiff.

Maggs & Co.	£600	0	0
Shail	590	0	0
DAVIES (<i>accepted</i>)	464	17	0

For the erection of additions to the temporary school at Caerphilly, for the Glamorgan Education Committee.

Ginger Lee & Co.	£460	0	0
Humphries	407	0	0
Harrison & Co.	400	0	0
McManus	380	0	0
Banbury	379	0	0
Davies	370	11	0
Smith & Co.	362	5	0
HARBROW (<i>accepted</i>)	340	0	0

WORLEBURY.

For erection of a golf pavilion. Messrs. HANS PRICE & WM. JANE, architects, Weston-super-Mare.

Penny	£963	15	0
Addicott	915	10	0
Wire-Wove Roofing Co.	900	0	0
Rodway	894	0	0
Fear & Sons	874	10	0
Sprake	860	0	0
C. & E. Stradling	830	0	0
G. & J. STOKES & SON, Weston-super-Mare (<i>accepted</i>)	805	0	0

WORTHING.

For the construction of a ladies' lavatory at the south-west corner of the Town Hall.

Bostel Bros.	£269	17	6
Baker	262	16	0
Sandell & Sons	255	0	0
H. W. Sandell (<i>recommended</i>)	254	4	0

THE Neath Town Council have adopted a proposal to borrow 5,585*l.* for laying out pleasure gardens and recreation grounds at Mount Pleasant, Melincrythan.

THE Wigton Rural District Council have accepted the scheme of main sewerage and sewage disposal for Fletcher-town, prepared by Mr. Harry W. Taylor, A.M.I.C.E. (Messrs. Taylor, Wallin & Taylor), of Newcastle, and have engaged him as engineer for the execution of the works. The sewage will flow by gravitation to the outfall, and be purified by the latest bacterial system.

THERE is a proposal on foot to erect a large hydro at Stratford-on-Avon. The syndicate which has been formed for this purpose have acquired the Rowley House Estate of four acres, finely situated on the banks of the Avon. The existing residence will be utilised for the accommodation of visitors until the new hydro is completed, after which it will serve as an annexe. A most picturesque design for the establishment has been prepared by Mr. L. L. Dussault, architect, Birmingham, having the front elevation carried out in sand-faced brick with stone mullioned windows and half-timbered gables. It is understood that a contract has been entered into for the erection of the building at a cost of 22,500*l.* The plans provide for the accommodation of about two hundred guests. It is calculated that during the long Stratford-on-Avon season (which commences with Shakespeare's birthday, April 23, and terminates towards the end of September), the visitors will average 180 per day, and during the remaining months 50 per day. Considering the numerous attractions of the town and neighbourhood this estimate seems moderate. The share capital of the Stratford-on-Avon, Ltd., is 45,000*l.*, of which 35,000 *l.* shares will be issued to the public.

VARIETIES.

MR. C. E. RIVERS, of the local borough surveyor's department, has been appointed borough surveyor for Harrogate at a salary of 350*l.*, rising by five annual instalments of 20*l.* to a maximum of 450*l.*

MESSRS. HALL & DALBY, architects, Leeds, have prepared plans for a cottage hospital of 24 beds, and an outpatients' department to be erected at Goole at an estimated cost of 5,500*l.*

THE Bury Corporation are spending 37,000*l.* on extensions in connection with their gas undertaking. The items are as follows:—New mains, 12,000*l.*; meters, 15,000*l.*; sidings, tar plant, &c., 5,000*l.*; and cookers, 5,000*l.*

IN regard to a recent application of the York City Council to the Local Government Board for sanction to the borrowing of 57,637*l.* for sewage purposes, the Board have intimated that the scheme is generally satisfactory, but that certain details require to be amended and amplified. The plans are accordingly being amended and a revised estimate prepared in view of the Board granting their sanction to the necessary loan.

AT a special meeting of the Newport Parliamentary and Works Committee last week consideration was given to the question of reconstructing Newport Bridge. The Town Clerk reported that he had received designs from several firms offering to provide cross-river communication over the Usk on the site of the present bridge. It was decided to recommend to the Corporation that the time was now opportune to proceed with constructing a new bridge. Discussion ensued as to the material. While some of the members favoured a steel bridge, the majority were in favour of a ferro-concrete bridge, with a 60-feet roadway. It was resolved to invite designs for such a bridge from the leading engineers and experts in ferro-concrete in this and other countries. During the discussion it was stated that a ferro-concrete bridge could be erected without materially interfering with the traffic at an estimated cost of about 40,000*l.*

WE gave in our issue of March 31 a large number of the Civil Service Estimates of the expenditure on Government Buildings to be submitted to the House of Commons for the year ending March 31, 1912. Under the heading, "Public Buildings, Great Britain," the total amount asked for on behalf of new works, alterations, additions and purchases is 179,700*l.* The principal items are 16,500*l.* for the erection of offices in Whitehall Place for the Board of Agriculture (total cost 90,700*l.*); 17,200*l.* on structural works at the National Gallery; 17,000*l.* for the extension of the Patent Office (total cost 96,000*l.*); 30,000*l.* for additional courts at the Royal Courts of Justice (total cost 97,500*l.*); 13,300*l.* on new buildings for die and seal departments at the Mint; 8,000*l.* for erecting new offices for the Public Trustee and Lunacy Departments (total cost 85,000*l.*); 6,500*l.* on increased accommodation at the Melting Branch of the Royal Mint (total cost 15,400*l.*); 20,000*l.* for erection of stationery office buildings in Lambeth (total cost 124,500*l.*); 2,500*l.* on alterations at the South Kensington generating station for the Office of Works; 4,800*l.* towards fireproofing Sasines office, General Register House, Edinburgh; and 10,000*l.* for works at the National Gallery of Scotland.

THE following plans have been approved during the past month by the various Corporate Committees of the Bolton Town Council:—Falcon Spinning Co., Ltd., for crossing in Handel Street; Mr. J. M. Smith, alteration to Picture Palace in Bury Old Road; Bolton Education Committee, for special school in Flash Street; Messrs. Bradshaw & Gass, alterations to St. James's School, Waterloo Street; Mr. John Smith, new streets and levels off Wigan Road; Mr. A. Maginnis, for six houses in Deane Church Lane; Messrs. Barlow & Jones, new weaving shed in Slater Street; Messrs. J. Sharmon, Son & Co., Ltd., for pavilion at Robin Hood Hotel, Lever Street; Mr. R. Threlfall, rebuilding works in Salop Street; Mr. W. H. Orrell, for 12 houses in Hawarden Street, Astley Bridge; Messrs. J. Chadwick & Bro., Eagley Mills, for stabling; Mr. R. R. Rothwell, new streets and levels off Blackburn Road, Astley Bridge; St. John Ambulance Brigade, for drill shed in Weston Street; Mr. R. S. Hirst, for four houses in Lever Edge Lane and Calvert Road; Messrs. Hughes Bros., 12 houses in Georgina Street, Hulton; Mr. Edward Gerrard, for motor shed in Plodder Lane; Mr. J. Ormrod, for eight houses in Deane Avenue; Mr. W. Heaton, for new entrance and crossing at Hollinhurst, Chorley New Road; Mr. C. Stott, two houses in Church Road; Messrs. Jos. Jackson & Sons, new streets and levels off Lonsdale Road; and Mr. J. Uttley, for 12 houses in Lonsdale Road.

ARCHITECTS' CLAIM FOR FEES.

(Concluded from last week.)

JUSTICE GRANTHAM and a special jury, in the King's Bench Division on April 6, resumed the hearing of the action in which Messrs. Fair & Myer, architects, sued the Harper Electric Piano (1910) Company, Ltd., of Holloway Road, N., for the recovery of 275*l.* for architectural services rendered in connection with the erection of a proposed cinematograph theatre, rink, and café.

The evidence on behalf of the plaintiffs' case was reported in our supplement of last week, p. 14.

In the course of cross-examination by Mr. Thorn Drury, A. Brumwell Thomas, F.R.I.B.A., one of the witnesses called by the plaintiffs, said that quantity surveyors' charges varied. In his own experience of a case in which the tender was 150,000*l.* he thought the quantity surveyor received as much as 1½ per cent. In another building he (the witness) had completed and which represented a cost of 60,000*l.* or 70,000*l.*, the fee of the quantity surveyor was 2 per cent. A fee of 2½ per cent. in a small job of 5,000*l.* would be normal.

Mr. Drury, in opening the defendants' case, repeated that it was understood that plaintiffs were to be paid a nominal sum for their services if the scheme were abandoned, but the scheme had never been abandoned. It was also understood that plaintiffs in other events were to be paid 5 per cent. inclusive upon the total cost of the building.

Mr. S. C. Harper, managing director of the defendant company, as he was of the former one, stated that last year it was proposed to form a new company with additional capital, there being in view a site in the Holloway Road for the erection of a cinema theatre, café, and so on. The County Council had passed, he said, a resolution on March 1 of last year to let the company this site, and prepared a building agreement which could be extended directly they were ready to go on with the building. The County Council had told him that they did not give options, but that they granted building leases, and that before they communicated with anyone else they gave them notice to ask if they wanted to take up the option. Mr. Harper proceeded to give his version of the various interviews he had had with the plaintiffs. Mr. Fair, when asked what would be their charges if the scheme did not go through, had said "Just a nominal sum for getting out the preliminary plans." Witness wanted to know what he meant by a nominal sum, and Mr. Fair replied that that would be according to the time spent on the work, adding "We shall not quarrel about that." The prospectus was published on May 31, but they did not get sufficient money to enable them to embark on this scheme.

In cross-examination by Mr. Neilson, the witness said that managing director he had given Mr. Fair instructions to send necessary plans to the L.C.C. in order that any objections concerning exits and other details should be ascertained. Mr. Neilson: The necessary procedure you knew had to be adopted before plans could be passed. Your use of the word "preliminary" was, to say the least, unconsidered?—do not think so.

Mr. Harper said they had approached Messrs. Fair & Myer because they were responsible for the Finsbury Park park, which was looked upon as most up-to-date. They had then appointed architects in this case with the knowledge of his directors.

Answering further cross-examination, the witness persisted in the declaration that the work accomplished by the plaintiffs was of a preliminary character.

Mr. Neilson: What other drawings can you suggest could be prepared for the erection of buildings together with the specification and quantities?—I do not know much about them.

Counsel: Then how can you say that all that has been done is preliminary? Point out any plan that has not been prepared but what you say is necessary for the completion of the scheme.—I cannot.

Then you have no ground for saying they were preliminary plans?—I consider they were.

It is not unfair to ask you on what ground you say these are preliminary plans?—Everything that has been done is preliminary, because the whole scheme was dependent upon getting the capital.

If you mean plans must come first and the building afterwards I agree with you, but what ground, I ask you again, have you for suggesting that these plans, which were working plans and drawings, were merely preliminary?

The Judge: He has given you his answer.

The witness said that subsequently Mr. Fair and he discussed how the scheme could be modified, and subsequently

it was modified. Witness added that he was trying to get capital in another way, and he was still sanguine on the subject. In accordance with an agreement the London County Council were still using the land for tramway storage purposes.

Mr. John Farren, an architect and surveyor with thirty-five years' experience, said he had examined the plans, specifications, and quantities in this case.

Mr. Thorn Drury: Does the specification and the alleged bills of quantity strike you as being the usual specification and bill of quantities, prepared for the execution of the work, or as documents prepared to get rough estimates?—Documents to get rough estimates undoubtedly. No details are given.

Mr. Drury: What do you say would be the proper sum supposing the defendants ought to pay?—I say forty guineas.

Mr. Neilson (cross-examining): You are not a Fellow of the Institute?—No, but I am an architect and surveyor.

Mr. Neilson: Have you any qualifications at all beyond the fact that you call yourself an architect and surveyor?—I have been in practice for thirty-five years as an architect and surveyor, and that in itself, I venture to think, is a qualification. And I have had much experience during that period.

Mr. A. W. Cleaver, B.A., A.R.I.B.A., gave similar evidence, save as to the question of amount if any were due to the plaintiffs for past work. His figure was thirty-five guineas.

This closed the evidence on behalf of the defendants' case.

The jury in the result awarded the plaintiffs fifty guineas.

Mr. Thorn Drury asked for judgment for the defendants on the ground that his clients had paid a similar sum into Court with a denial of liability.

His Lordship agreed.

VICTORIA AND ALBERT MUSEUM

THE Department of Architecture and Sculpture has recently acquired two important examples of early French Gothic art, which are now on view in Room 8, immediately to the right of the main entrance. One of these, a cluster of five detached gray marble shafts, with united bases and capitals of stone, is said to have come from Villemer, a little village between Fontainebleau and Nemours, where it appears to have stood at the corner of a small cloister. The boldly-cut foliage and grotesque heads on the capitals are of a very early type, recalling the similar work on the north door of Chartres and the west door of Notre Dame at Paris in the first half of the thirteenth century. The other is a beautiful early fourteenth century statue in sandstone of the Virgin and Child, said to have come from Ecouen. The type is a traditional Parisian one, and the treatment of figure and drapery is closely akin to that in the admirable reliefs on the northern apsidal chapels of Notre Dame, which were probably executed between 1296 and 1316, under the direction of Pierre de Chelles. The upper part of the body of the Child is, unfortunately, lost, but in spite of this the statue is a singularly charming example of the mediæval sculpture of the Ile-de-France, at what is perhaps the most gracious point in its development.

MR. SYDNEY VACHER has recently presented to the Victoria and Albert Museum a valuable series of studies of Pompeian ornament and mural decoration, made by him in 1879; and a number of these have now been arranged for exhibition in the Department of Engraving, Illustration, and Design (Room 70). Among other additions to the exhibition rooms of this department are a series of tracings of old English stained glass, chiefly from the Minster and other churches in York, by Mr. Lawrence B. Sainsbury (Room 71) original designs for woven silks, made at Lyons in the second half of the eighteenth century (Room 72); while, to the collection of tools and materials illustrating the process of making Japanese colour-prints, in Room 74, a case has been added containing a set of Japanese brushes (the gift of Mr. B. H. Webb) and original drawings (unused), by Hiroshige, Kuniyoshi, and Kunisada II. In Room 65 a collection of Japanese colour-prints is now exhibited, illustrating the treatment of landscape subjects in this method, by various artists.

THE Rochdale Board of Guardians have agreed to build a nurses' home at a cost of 4,250*l.*

THE Barrow Town Council have decided to build a fire station in Abbey Road at a cost of 5,461*l.*, and to purchase a motor fire engine for 1,191*l.*

AMERICAN FAILURES IN REINFORCED CONCRETE WORK.*

It is a truism often repeated that the public has a short memory. The lessons to be derived from great disasters are soon forgotten except by a very small number. The fatal Iroquois theatre and Collinwood school disaster of a few years ago, so costly in child life and so much in the public mind for short intervals, showed the necessity of safeguarding the occupants of public buildings. For a time our civic authorities were active in having places of public entertainment carefully inspected. Much was heard for a season about fireproof curtains, accessible exits, fire drill and fireproof schools, but soon the public relapsed into its old ruts. Inspection became less searching, and the authorities more forgetful, and the public continues to run daily the same risks that the victims of these disasters ran. It sends its children to the same schools and attends itself the same places of public worship or entertainment, and only becomes conscious as to the chances it is taking when some other horrible calamity occurs. Truly, the public has a short memory.

It is chiefly because humans are humans and not machines that we continue to take chances. A machine can be constructed to do a given thing in a specified way an endless number of times. Whether its work be punching or drilling or cutting, it does it with machine-like precision. It never tires, never grows careless, and is never actuated with a spasm of over-zeal or indolence. It is never tempted to scamp its work. It is never influenced by the desire to make excessive profits, and never knows the flattery of the multitude or the sting of adverse criticism. It never forgets, never flatters, never tempts, never cajoles, never bluffs, and never pleads. But men are differently constituted. They possess the human traits. They are influenced by example, possess passions and emotions, cherish hatred, remember injuries, and forget the lessons which great crises in their experience ought to impress on them. The attention of engineers, architects, builders, and building departments has been called to the lessons which are taught by the failures of structures designed and erected by them or under their supervision. It is not that the field is a new one that this paper is devoted to so hackneyed a topic, but to emphasise once again, firstly, those elements which have contributed to failures, and, secondly, those corrective or precautionary measures which will tend to prevent their recurrence.

Especially in the use of reinforced concrete has the general reader's attention during the past five years been called to a rather large list of failures, all of them more or less serious and not a few of them having fatal results. Reinforced concrete has been comparatively new in the building art and in its fabrication is very different from other materials with which the constructor is familiar. Unlike steel or wood, its strength increases with age. It is poured into forms, at which time it is plastic, and has to be sustained until it acquires sufficient strength to support itself. It consists of two materials, not one, and since the disposition of these with respect to each other vitally affects the strength of the product, exercise for great care in this placing is necessary. More perhaps than of any other building material is this true—it possesses great capacity for injury in the making and placing. Following are cited a number of failures of reinforced concrete structures which during the past twelve months or so have occurred, and reference to which in the engineering press has come to the writer's notice. They represent typical cases, and an examination of the list will enable us to classify the causes under a few general heads.

The comparatively recent announcement that the great dam across the Colorado River at Austin, Texas, is to be rebuilt has served to recall its failure over a decade ago. It will be remembered that that failure was announced to the world at first as a serious reflection upon the engineering profession because some hydraulic engineers of eminence had been connected with the work. Subsequently, however, when the whole history had been investigated, it was found that the authority of the engineers had been interfered with to such an extent by the city officials in control that their responsibility had been practically nullified. Indeed, one prominent engineer had resigned rather than have his name

further connected with a work over which he had no control. On February 28, 1910, a reinforced concrete arch of three spans over the Flat Rock River at Edinburgh, Ind., collapsed during an unusually heavy flood. The design had been furnished by a well-known bridge company, but the Bridge Commissioners, in their desire to economise and with a wisdom commensurate with their experience in such matters, decided to omit the piling underneath the abutments, and to carry them instead to a somewhat greater depth. And so the bridge was built. The materials supplied and the workmanship throughout seemed to be excellent, but in the season of heavy flood the piers were undermined by scouring, and the structure collapsed. There does not appear to be any other cause of failure than the insufficiently-supported piers, and the responsibility, of course, must rest on those who ordered the modification of the original plan.

A concrete dam at Fertile, Minn., was washed out by floods early in April 1910. The trouble is attributed to the fact that the foundations were not laid sufficiently deep to prevent scouring and undermining, and failure ultimately ensued.

The partial failure of the Bayless reinforced concrete dam at Austin, Pa., in January 1910, exemplifies a trouble of a slightly different character. The dam was completed in December 1909, at a cost of upwards of \$70,000. On completion, it was observed that there was a small crack $\frac{1}{8}$ inch wide, extending from the top of the dam to the ground level. Subsequently others, similar in appearance, developed, and during a heavy freshet on January 23, 1910, a section of the dam between vertical cracks, under the thrust of the impinging water, slid forward some 18 inches. This movement covered a period of some eight hours and then stopped. Investigation disclosed the information that the failure was due primarily to the fact that the dam was founded upon a bed rock, the successive strata of which were separated by layers of shale or clay. The impounded water, having worked itself under the foundations, had softened the clay, with the result that the upper stratum carrying a portion of the dam had moved forward on the lower. It was stated that the weakness of the concrete was doubtless due to the fact that much of it had been hurriedly placed, part of it in freezing weather. The anchor bolts, which had been grouted into the foundation rock, had moved outward with the rock into which they were anchored.

On April 7, 1910, the collapse of a concrete roof under construction of the new car-barn of the Shore Line Electric Road at Saybrook, Conn., took place, and resulted in the death of one man and the injury of two others. The roof was a 4 inch slab of reinforced concrete on girders, about 8 inches on centres and of 37 feet span. The last work had been completed about ten days and the forms were being removed. It was believed that the premature removal of the forms and the excessive loading of the green roof slab with roofing material were the joint causes of the accident.

On July 13, 1910, one of the columns of the concrete groined arch roof to the filter chambers in course of construction at Owen Sound, Ont., collapsed while the centering beneath was being removed. Two men were quite seriously injured. The accident, apparently, was due primarily to the early removal of forms, combined with the fact that the 13 x 18 inch columns on two sides of the square roof of the arch were quite incapable in themselves of resisting the arch thrust. The forms were removed in only four days after pouring, notwithstanding the fact that seven days was the minimum specified time for removal.

The upper part of a reinforced concrete chimney under construction at the plant of the American Woollen Company, South Royalston, Mass., collapsed on April 9, 1910, causing the death of two men. The chimney was to have been 105 feet high, with an inside diameter of 4 feet and an outside diameter of 4 feet 8 inches at the bottom, and with walls varying in thickness from 8 inches at the bottom to 4 inches at the top. The forms used in construction were in two sections, each $3\frac{1}{2}$ feet deep. The procedure was to fill the upper form, then to loosen the lower, and set it above for filling. This took one day. Next morning the form in the lower section was loosened, and it was placed on top and filled. Thus the concrete in any $3\frac{1}{2}$ foot vertical section had less than twenty-four hours in which to set before its side-supporting forms were removed. The accident occurred when a height of about 70 feet had been reached, the section last uncovered, then only twenty hours old, caving in and carrying the workmen to the ground with it. It is reported that the temperature the day before the break had taken a sudden drop, but it was not at any time below freezing. The failure was undoubtedly due to loading a very green concrete

* An address entitled "Some Failures and the Lessons they Teach" delivered by Mr. Peter Gillespie before the Third Annual Convention of the Canadian Cement and Concrete Association at Toronto last month and published in *Construction*.

ore it had acquired sufficient resisting power, as the materials were good and the design and execution satisfactory.

A reinforced concrete grain elevator of typical design led under a normal pressure of grain at Springfield, Ohio, October 24, 1910. As has been rather common in elevator construction where a battery of cylindrical units has been constructed, the unused spaces, external to the cells, but lying within the tangent walls, had been utilised as auxiliary bins. No one saw the beginning of the collapse, so that its exact behaviour cannot be stated, but from the appearance afterwards it was evident that the lower section of the wall where the pressure was greatest was forced out under the pressure of the wheat. This portion sheared off clean at the place where the straight wall connected with the circular wall of the larger bin. The weak point in the structure was at the horizontal rods in the straight wall were not connected to those in the circular, nor were they tied back for any distance into the concrete of the circular walls. It was stated that the plans showed the rods in the straight walls merely fastened into the circular bins, and that the failure so fasten them was due to the negligence of the foreman.

On November 22, 1910, a four-storey reinforced concrete building being erected for the Henke Furniture Company, Cleveland, Ohio, suddenly collapsed, throwing one of the walls over a two-storey frame building next door, and so crushing the structure as to cause the death of four of its occupants and the serious injury of seven others. It was of reinforced concrete column and girder construction, with hollow tile and concrete floor system, and brick curtain walls rising in thickness from 21 inches at the basement to 12 inches at top floor. A commission of enquiry was immediately appointed, on which were representatives of the Builders' Exchange, the Cleveland Engineering Society, and the Cleveland Chapter of American Institute of Architects. This commission was empowered to take evidence, and to consult every available source of information that might explain the cause of failure. After the wreck had been carefully examined, the design checked over, and the witnesses examined, the finding was announced. The failure, it stated, was due primarily to the premature removal of forms in the third storey. It fixed the responsibility on the architects, the contractor, the owner, and the Department of Buildings for the city of Cleveland. The architects were adjudged responsible in that they did not give sufficient consideration to the removal of forms, in that they did not give sufficient attention to the materials, and in that they did not give adequate supervision to the work of construction. The contractor was judged culpable in that he employed foremen who were entirely ignorant of the intent of plans and specifications or the nature of the materials they were handling. In consequence, the sand was inferior, the forms were removed prematurely, and that regardless of weather conditions, the green concrete was regularly overstressed, the members were not of the sizes called for in the plans, the concrete composing them was open and porous, and sawdust and shavings were found in the bases of columns. In addition, it developed that less cement had been delivered to the building than would have been necessary to construct it had it been built as planned.

The owner was deemed responsible in that he had not employed a special concrete inspector on the work, as required by the building regulation.

The Department of Buildings was held responsible in that it had ignored the requirements of that portion of the building code which makes it necessary that the owner employ a special reinforced concrete inspector. It thus appears that the Building Department rather than the building code was at fault.

I have chosen to classify the causes of failure in the above listed cases as follows:—

- (1) Interference with a suitable design by those in authority, but not possessing a knowledge of engineering practice.
- (2) Defective design.
- (3) Inferior materials.
- (4) Ignorant or wilful disregard of specifications and plans.

The first of these is, unfortunately, of too common occurrence. In all human probability the Austin dam and the Edinburgh arch would be standing to-day but for the intervention of the "cock-sure aggressive" individual, who, when clothed with a little brief authority, becomes a paragon of wisdom on everything under high heaven. This type is found frequently in our municipal councils, and it is to be regretted that engineers of wide experience and good judgment some-

times permit themselves to be dominated by them. An engineer's judgment may be in error, but is it not more likely to be productive of good results if it be corrected through consultation with other engineers of equally good standing, than if it be reversed by men entirely untrained in the problems of design and construction?

Fortunately, the day of unsafe design in reinforced concrete is becoming a thing of the past. The design of reinforced concrete, like the design in wood or steel, has been reduced, or is being reduced, to a standard based on the proportion and strengths of materials which constitute it. There is, therefore, no reason to-day why the average practising engineer should not acquaint himself with concrete designing, so that, at least, he can finish his plans with some such detail as he does for his structures in steel. He may, if he prefers, leave the details to his contractor, who, like the contractor for steel, can make them according to the standards of his practice. He must exert every care in informing himself as to the character of the materials he must employ and of the foundation upon which he proposes to erect his structure. The dams at Fertile, Minn., and at Austin, Pa., furnish illustrations where disaster might have been averted by a careful examination of the underlying strata, prior to construction. The designer must recognise, too, that the safety of his design depends upon the contractor as well as upon himself, since concrete construction is not fixed as is that in steel. An editorial in the "Engineering News," speaking of this phase of a designer's responsibility, asserts that "the design cannot be sent from the drawing table with perfect confidence in its precise reproduction in the structure. It is the joint product of the man in the office and the man in the field, and any design which fails to recognise this is a poor one, no matter how nearly it may conform to accepted standards. No engineer who is not prepared to supervise the construction of a reinforced concrete structure is justified in designing that structure as closely to the safety limit as he is when the construction is to be under his eye."

The prevention of the utilisation of inferior material is the work of the engineer, the architect, and the inspector. No reinforced concrete work of any magnitude should be constructed without a capable, conscientious inspector. The Henke building suffered from inferior material, as it did from almost every malady to which reinforced concrete is heir. The remedy for this is vigilant, constant inspection. Failures resulting from the premature removal of forms could invariably have been prevented by the exercise of intelligence and a little precaution. The Henke building disaster, the Owen Sound filtration plant accident, the car-barn roof failure at Saybrook, Conn., and the chimney collapse at South Royalston, Mass., were all preventable if careful examination had been made before stressing the concrete, which, possibly due to temperature conditions, had not yet acquired its preliminary strength. The failure of the grain elevator at Springfield, Ohio, was due to the ignorance of a foreman. Any foreman who appreciated the proportions of the materials he was handling would not make the blunder that was made.

The remedy for these evils is the employment of the experienced, intelligent, painstaking inspector. He sees that the forms are cleaned before the concrete is poured, that the ingredients are correctly proportioned, that the steel is properly placed and in correct amount, that the members are of dimensions called for by the plans, and that the forms are not removed until the material has acquired sufficient strength to be self-sustaining. The capable inspector is essential to safe construction.

BRITISH SECTION AT THE TURIN EXHIBITION.

THE visitor to the Turin International Exhibition entering by the gate at the end of the Corso Massimo d'Azeglio will find on his right, in a commanding position overlooking the River Po, the pavilion which houses the exhibits from Great Britain and Ireland.

The British Section is unique, inasmuch as it is self-contained. British-made machinery, for instance, need not be looked for in the International Machinery Hall, for examples of the most recent developments in electrical plant, gas and oil engines and machine tools will be found in a Hall which forms, facing the river, the left wing of the British Pavilion.

Leaving the Machinery Hall the visitor will first pass through the Land Transport Court, which contains very fine examples of the advance made of late years by Great Britain in the manufacture of motor cars.

He will next reach the Court of Chemical and Scientific Industries, where everything is to be shown, as far as pos-

sible, under actual working conditions. Generally speaking, no means are provided at exhibitions for demonstrating the utility of the instruments exhibited, but the two completely-equipped laboratories which are shown here mark the inauguration of a novel and eminently practical method of exhibition. Another instance of the same system is the adjoining representation of a house, outwardly designed on the same quaint and picturesque lines as those built in England during the Tudor period. Its rooms will contain examples of different styles of British-made furniture (for which the makers claim that it is the most luxurious, practical and elegant in the world), and silk-hangings, tapestries, and carpets will also be shown in situ.

Further on the right are exhibits from the cotton and linen factories of the North, as well as tweeds of every kind. Close by, in a separate enclosure, are tableaux representing that great centre of the textile industries—Bradford—which will undoubtedly prove a special attraction of the British section.

Traversing the remainder of the Textile Section, the visitor will descend a short flight of steps into the sunken part of the centre of a handsome gallery, where there will be exhibited a number of models of ships, made to scale and complete in the minutest detail. He may then visit the sections devoted to food products, sporting guns and rifles, perfumery, and "real British leather," and stand at last just outside the rotunda, where are collections of the most beautiful pottery, china, and glass. So far as the pottery industry is concerned, Great Britain has recently taken a decided lead. In one or two cases, after years of patient experimental research, her potters claim to have re-discovered the secrets of the art of the ancients in this respect; and what is shown may, therefore, be regarded as being among the most valuable contributions to the section.

The Photographic Court should not be omitted, containing as it does many fine specimens of what may be described with truth as the most recent developments of this branch of "applied art."

The Circular Hall, in the centre of the rotunda, will be found fitted up as a library, the cases in many instances being arranged so that the books may be taken down and examined. Upwards of thirty publishers are contributing the newest and most notable books, which will cover every department of literature, from standard works on religious, scientific, educational, and biographical subjects, to the most recent productions of the best-known English novelists. The principal geographical publishers are exhibiting maps, and a representative display will be made by the bookbinding and printing industries.

Last comes a collection of exhibits from the British Board of Agriculture, which form an excellent advertisement of what may be regarded as rural and scientifically-rural Britain.

QUEENSLAND'S ARTESIAN WATER.

THE Great Australian artesian basin includes considerably more than one-half of Queensland, taking in practically all that part of the State lying west of the Great Dividing Range, with the exception of a small area in the north-west contiguous to the Northern Territory; a large slice of New South Wales along its northern boundary and west of the Great Dividing Range, and the north-eastern part of South Australia proper, together with the extreme south-east corner of the Northern Territory. This basin is about 569,000 square miles, of which 376,000 are in Queensland, 110,000 in South Australia, and 83,000 in New South Wales. The Queensland intake beds, estimated at 50,000 square miles, are the largest in the world, save those of the Dakota basin in the United States, but in storage capacity they are superior to those of America.

There are said to be 1,650 bores tapping the artesian water of the three States, but in comparison with the huge area covered by the deposits—something like ten times the size of Great Britain—very little has been done to develop this great artesian area. Of 850 wells in Queensland in the year 1908, 229 were less than 500 feet deep, 200 from 500 to 1,000 feet, 231 from 1,000 to 2,000 feet, 124 from 2,000 to 3,000 feet, and 66 over 3,000 feet. The aggregate flow of all the bores would be about 65,000,000 cubic feet. Bimerah Run, No. 3, lying between the Barcoo and Thomson Rivers, had the deepest well at the publication of the last Queensland statistics on the subject. Its depth was 5,045 feet, and the flow was said to be 70,000 gallons daily. Wells uncontrolled yield from one to three million gallons a day, while a bore at Cunnamulla is said to have a daily flow of 4,500,000 gallons.

When analysed, the water of some of these wells has been found suitable for wool-washing only; others are good enough for watering stock, but not for irrigation, owing to the presence of alkali; others, again, serve for both stock and irrigation. Some of the bores discharge water containing sulphuretted hydrogen, which is frightfully offensive, and useless for any purpose. Water fit for stock often has mineral flavour, but if cattle drink it safely human beings do not run any risk. Temperatures in the Queensland wells vary from 60 to 202°, so that a warm bath is a familiar luxury in the artesian country.

The cost of artesian wells works out at an average of 17s. 6d. per lineal foot. It depends upon the depth to which boring operations have to be extended, and on the accessibility of the bore to a railway station. According to the latest figures available, contracts, including the use of six inch casing, have been let at the following rates:—Up to 1,100 feet, 11s. per foot; 1,000 to 1,500 feet, 12s. 6d.; 1,500 to 2,000 feet, 13s.; 2,000 to 2,500 feet, 14s.; 2,500 to 3,000 feet 16s.; 3,000 to 3,500 feet, 19s.; 3,500 to 4,000 feet, 24s.

THE Willesden District Council propose to erect public baths and wash-houses at a cost of 16,500l.

SIR MICHAEL NAIRN is to extend, at a cost of 10,000l., the hospital he presented to Kirkcaldy about twenty years ago.

MESSRS. LEWIS SOLOMON & SON, architects and surveyors, announce their removal from 16 Union Court to 5, Finsbury Pavement, E.C.

THE Newcastle Board of Guardians are advised by their Hospital Extensions Committee to proceed with the erection of a new block at a cost of 18,700l., which works out at 121l. 10s. per bed.

A LOCAL Government Board inquiry will be held on April 24 into the application of the Corporation of Dublin to the Local Government Board for Ireland for their sanction to a loan of 128,129l. for the purpose of carrying out extensions of the electric lighting system.

THE Pontardawe District Council has decided to interview the agent for Colonel Gough, and negotiate for land which he offered for the erection of 150 houses for the working classes in the Ystalyfera area, which is notoriously overcrowded. The first instalment will be one of fifty houses.

MR. W. H. COLLIN, an Inspector of the Local Government Board, held an inquiry at the County Hall, Oxford, in respect of the application of the County Council for consent to borrow a sum not exceeding 10,000l. for the provision of additional County Offices and Buildings at the corner of New Road and Titmouse Lane, and the conversion of the second Assize Court into a Council Chamber.

THE Bristol General Hospital Committee had collected up to last week 38,416l. towards the 45,000l. required for an extension scheme. The proposal is to erect a new wing on land the property of the hospital at a cost of about 30,000l. Plans have been prepared by Messrs. Oatley & Lawrence, architects, Bristol.

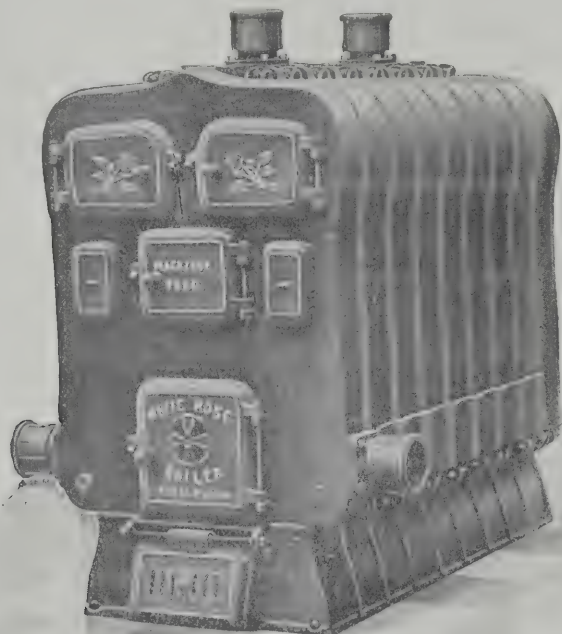
THE partnership between William Morgan Lewis and Thomas Naunton Morgan, architects and surveyors at Pontypridd and Tonypandy, Glamorgan, under the style of firm of Messrs. Lewis & Morgan, has been dissolved by mutual consent. The practice hitherto carried on at Pontypridd will be continued by Mr. W. M. Lewis alone, and the practice hitherto carried on at Tonypandy will be continued by Mr. T. N. Morgan alone.

THE Glasgow Dean of Guild Court last week granted the following linings:—Trustees of Parkhead Parish Church, to erect a suite of halls adjoining church, Great Eastern Road; trustees of Hillhead Baptist Church, to erect a mission hall in Canal Street, Port Dundas; the Corporation of the Royal Exchange Assurance Company, London, to take down existing building and erect in its place a new building at the south-west corner of West George Street and West Nile Street; Mr. J. Porter, 577 Dalmarnock Road, to erect a tenement of dwelling houses in Summerfield Street.

THE Chief Officer of the Birmingham Fire Brigade (Mr. A. R. Tozer) has issued the following circular to the occupiers of lofty buildings in the city:—"Dear Sir,—The Fire Brigade Sub-Committee have again had under consideration the question of the grave risk that exists in many of the lofty buildings in the city, where caretakers and employees are engaged or sleep on the premises. I am requested to call your most serious attention to the matter, and to inform you that if no adequate provision for escape in case of fire has been already provided by you, no time should be lost in making such provision. If I can be of assistance in advising you in the matter I shall be pleased to do so."

at Stand 194, Row J, Messrs. Hartley & Sugden, Ltd., make a good show of their boilers and heating appliances. There are three cast-iron sectional "White" boilers representing Series H., B., and F. for heating public and private buildings, greenhouses, &c., by hot water circulation. Our illustration is of one of the H. type, which is the only type of sectional boiler with a magazine fuel feeder on the market; it has been designed to burn at least twelve hours with one charge of fuel. This type has been installed very extensively throughout the country, and has always proved most satisfactory and economical. "Sentinel" cylindrical boilers are a cheap but strong type of hot water heater suitable for small greenhouses, motor-houses, &c. The "Octradia" combination

materials into the finished cement. The raw materials as taken from the quarries are chalk, which is almost pure carbonate of lime, and gault clay, practically identical with the clay used in the Thames and Medway district. The chalk and clay are first mixed together in wash-mills with about 40 per cent. of water. The resultant "slurry" is then passed to large mixing and storing reservoirs, where absolute uniformity is ensured, before it is pumped either to the drying floors or direct to the rotary kilns. When the "slurry" is dealt with on the drying floors the moisture is evaporated by the waste heat from the kilns, which adjoin the floors, and this dried material, known as "slip," is broken up and burnt in the intermittent and continuous shaft kilns. When the burning is done in rotary kilns the



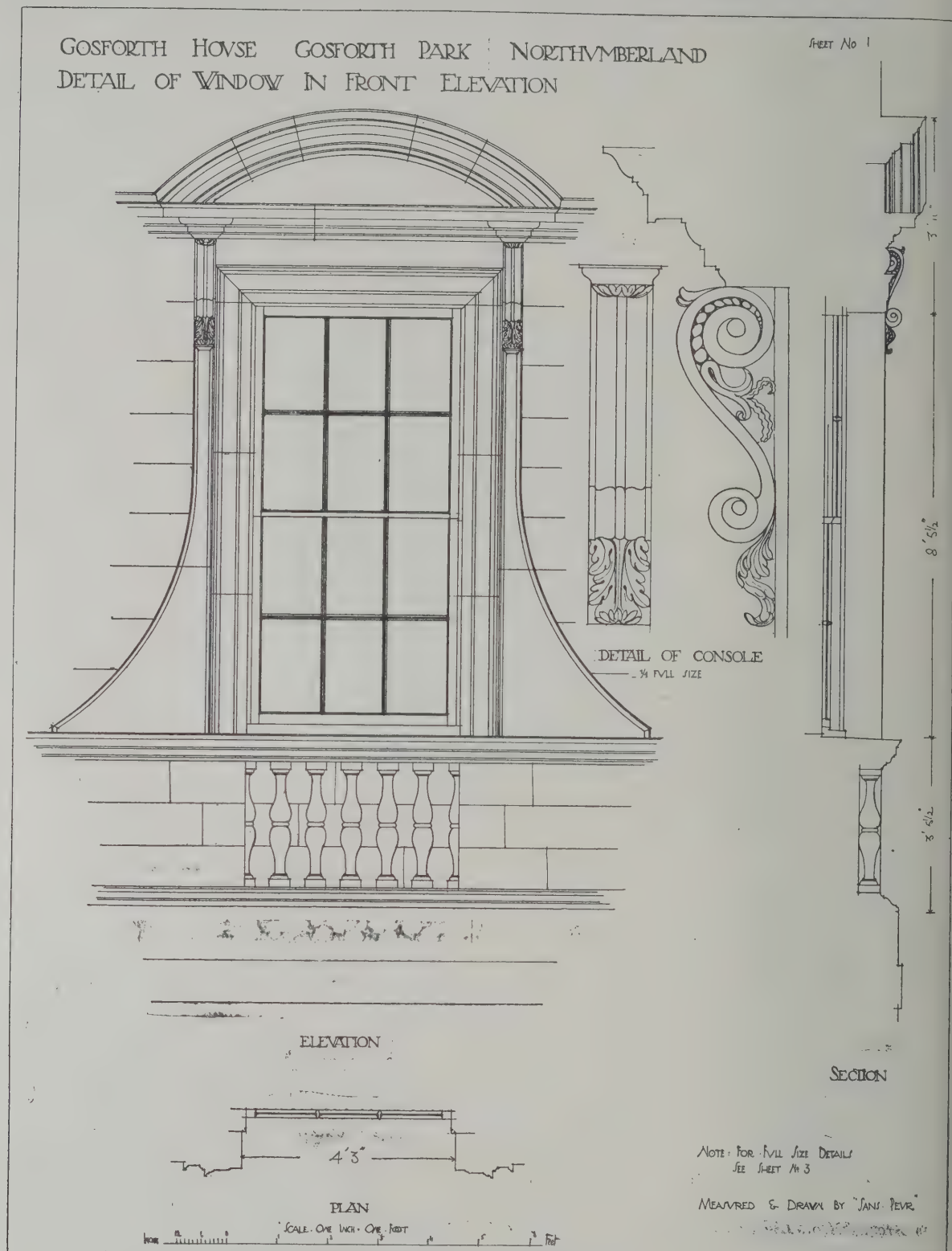
boilers serve the double purpose of heating and domestic water supply by means of an internal copper coil inserted in the waterway of the wrought iron boiler. The following boilers on exhibit are chiefly for hot water supply: "Manor," the "Hospital," the "Malvern," and the "Avile." The latter is fitted with cylinder, to show the method of use. These are all wrought iron boilers fitted for boiler work. There are several smaller boilers adapted to hot water circulation. The "Dromana" is a wrought iron boiler for heating by steam at low pressure. A vertical rivetted steam boiler is shown with all fittings, suitable for working at high pressure for motor or cooking and heating purposes. The steam jacketed pans for boiling liquid by steam are thoroughly tested by Messrs. Hartley & Sugden at 60 lbs. per square inch. Radiators, loose sections, &c., will also be exhibited on the stand.

Messrs. Sissons Bros. & Co., Ltd., of London and Hull, have, as usual, attempted to display within the compass of an exhibition stand their varied products; and distempers, paints, enamels, varnishes, &c. The two apartments, which form the main feature, are decorated in different but equally successful styles. The larger room, measuring 19 ft. by 11 ft., is in Adam's style; and the smaller, 16 ft. by 10 ft., is in the Louis XV. style. A comprehensive idea of the decorative treatment of panels, walls, and ceilings by their materials is thus obtained. The key-note of the larger room is flatted white, with a very delicate harmonious colour scheme of green introduced into the panelling. The small room proves that Messrs. Sissons' paints lend themselves equally well to the decorations applied to the larger room, and to those styles of decorations where elaborate and heavy ornamentation plays a conspicuous part. The colour contrasts are most pleasingly arranged on a white background. The ceilings in both rooms show distemper work upon Adam's swags and patterns of attractive design. The interior of the stand is panelled throughout in Adam's style, and is decorated with Hall's distemper in various shades. The Sussex Portland Cement Co., Ltd., are showing by samples and by demonstration the evolution of the raw

materials into the finished cement. The raw materials as taken from the quarries are chalk, which is almost pure carbonate of lime, and gault clay, practically identical with the clay used in the Thames and Medway district. The chalk and clay are first mixed together in wash-mills with about 40 per cent. of water. The resultant "slurry" is then passed to large mixing and storing reservoirs, where absolute uniformity is ensured, before it is pumped either to the drying floors or direct to the rotary kilns. When the "slurry" is dealt with on the drying floors the moisture is evaporated by the waste heat from the kilns, which adjoin the floors, and this dried material, known as "slip," is broken up and burnt in the intermittent and continuous shaft kilns. When the burning is done in rotary kilns the drying is dispensed with, and the liquid mixture is taken direct to the kilns, into which it is automatically fed and burnt with finely ground coal. The rotary kiln is an inclined steel cylinder, varying in length from 110 to 200 feet, revolving at a slow speed, from which the "slurry" finally emerges in the form of clinker. The clinker is taken to the grinding mills, where it is ground to an almost impalpable powder, containing a large portion of "flour." This is the finished production. The Company, being the first firm of English manufacturers to recognise that the more finely cement is ground the greater its value, claims to be the pioneers of the modern methods of grinding. To-day the Company produce one of the finest ground cements in the world in the "Newhaven" cement, which is guaranteed to comply entirely with the revised British standard specification. Their "Cathedral" brand was specially prepared for the restoration of Winchester Cathedral, and has since been largely used for other similar important works. It is used for reinforced concrete and fireproof floor construction, for which it is eminently suitable, and is also guaranteed to comply with the British standard specification. On the stand there will be a complete testing apparatus, and demonstrations will be carried out at intervals during the day.

The stand of the Ruberoid Company, Ltd., of 81-3 Knight-bridge Street, E.C., is itself worthy of attention. The white joinery contrasts well with the roof, which is of green ruberoid of a pleasant coppery green appearance. The exhibit partly consists of models showing the practical application of ruberoid roofing on flat and pitched roofs, the method of flashing, &c. The ruberoid system has held for the past twenty years a high reputation among architects and engineers both for flat and trussed roof work. It is easily applied to curved surfaces, and durable under extreme conditions of climate. A portion of the exhibit will also be devoted to ruberoid dampcourse, which has become one of the firm's leading specialities. The giant insulating papers will be fully displayed. The stand will, as usual, be floored with ruberoid flooring, which material is specially manufactured for use on concrete and brick floors, and for passage-ways and verandahs exposed to the weather. Like

"THE ARCHITECT" STUDENTS' SKETCHING AND MEASURING CLUB,



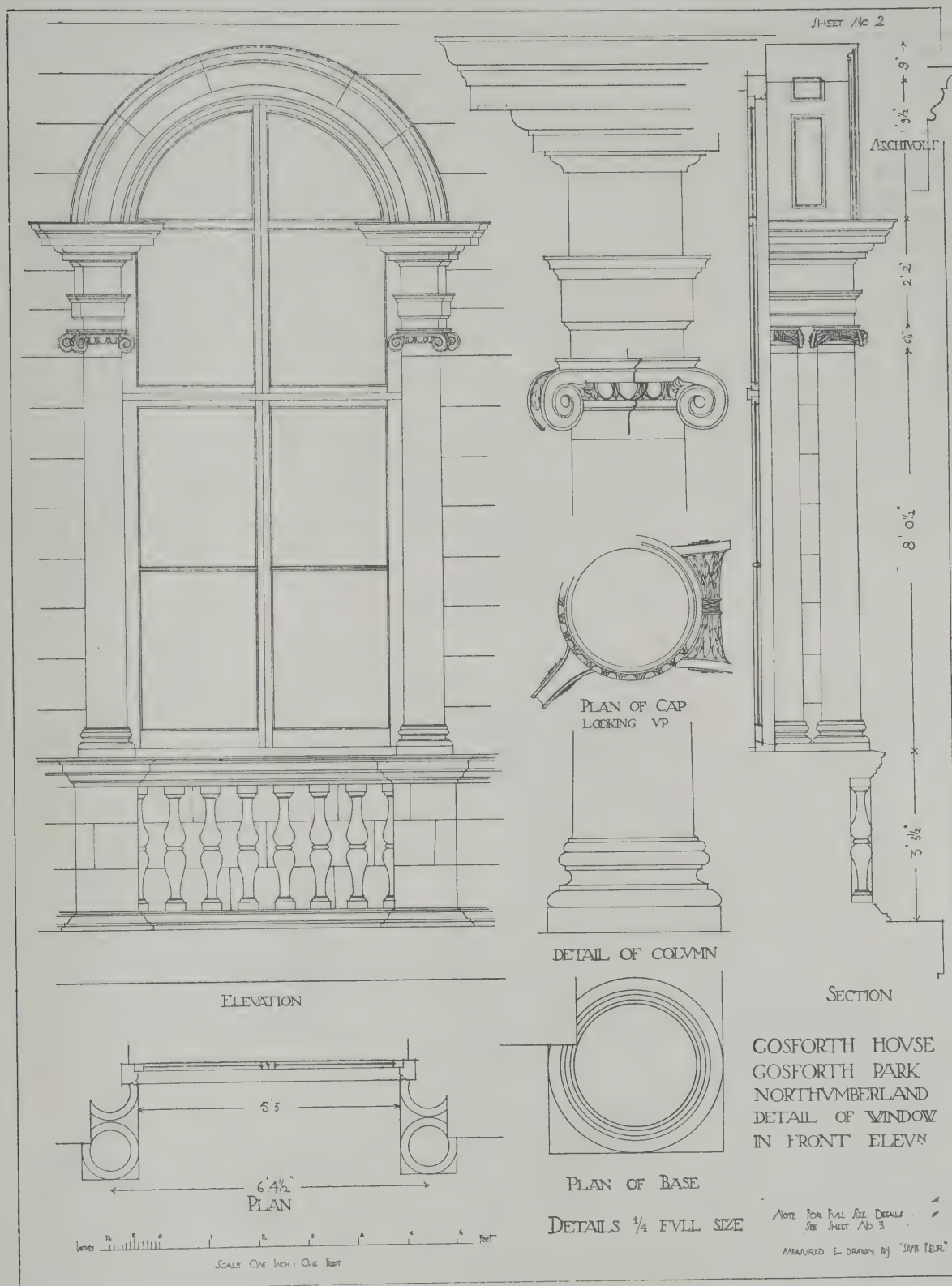
From a Measured Drawing by "SANS PEUR."

Gosforth House was designed by James Paine in 1757, who, according to Professor Blomfield in his book on the Renaissance, was one of the most skilful house-planners of the eighteenth century. He designed a great number of noblemen's houses during his career, notably Kedleston Hall. The two windows drawn are excellent examples, and show quite good feeling in the mouldings, &c.

the roofing, ruberoid flooring is manufactured in three colours, slate, red, and green. The Ruberoid Company have recently constructed new and extensive works at Brimsdown, Middlesex. It is worth remarking that ruberoid has been used for roofing all the large garages erected by the German Government for housing the Zeppelin airships, and is also in use for similar purposes on the Hangars at Shell Beach, Sheppey, the Crystal Palace, and elsewhere. Some 130,000 square feet of ruberoid roofing were used by Messrs. Lever Bros., soap manufacturers, on their new works at Durban, Natal, South Africa; whilst the portable buildings taken to the Antarctic by the Scott Expedition were built of identically the same material.

Messrs. H. C. Cleaver, Ltd., Tudor Works, Park Royal, N.W., have an attractive stand. Oak panelling in Jacobean and Elizabethan style is illustrated by numerous examples. These include "Tudoresk" patent panelling in wax polished and fixed complete from 1s. 6d. per square foot. Oak panelling in the Georgian period is also shown together with expert wood carving. There is a display of solid oak doors designed in harmony with the foregoing. The firm's Composition Modelled Decoration is exhibited in friezes and wall panels for Adams and Georgian work. To entirely new types of revolving door known as the dome oblique and the single direct types respectively are shown. Contrary to the usual practice in revolving door construction

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From a Measured Drawing by "SANS PEUR."

THE windows forming the subject of these drawings are both from the front elevation of Gosforth House, the one with the Ionic order being used centrally, flanked on each side by two windows similar to that in sheet No. 1.

tion the doors are semi-circular on plan and revolve round the operator instead of being pushed before him. This construction enables a Cleaver revolving door to be built in much smaller space than has hitherto been considered necessary.

Messrs. Ingram, Perkins & Co., Hardwood and Softwood Importers and Merchants, of Beech Street, Barbican, E.C., and Irongate Wharves, Paddington, W., again show their stocks of hardwoods and softwoods. Instead of displaying choice specimens of rare woods, the firm exhibit fair samples of the stocks at their yards of hardwoods and softwoods in everyday use from which they are prepared to execute at once orders received from builders, joinery manufacturers, shop-fitters, carpenters, &c. Amongst some of

their specialities are yellow deals, planed and unplanned boards and quarterings, prime American whitewood, hardwood floorings, mahogany logs, wainscot oak logs, Dominion whitewood facias, doors, mouldings, compo board, &c.; in fact the firm are open to supply any and all timber requirements with the exception of purely fancy woods. As a large quantity of timber will be used for erecting Coronation stands, Messrs. Ingram, Perkins & Co., who do a big business in this class of timber, have specially imported large consignments for this particular purpose, samples of which they are showing on their stand.

The Ravenhead Sanitary Pipe and Brick Co., Ltd., St. Helens, Lancashire, at Stand 49, Row D, make a big display of their rustic facing bricks. These are clean hard bricks

roughened on the face so as to give the appearance of well preserved age on a new building. When first the rustic brick was introduced some three years ago, the cut was straight and close, very similar to the bed cut, and consequently flat on face with no weathering property. Last year this was remedied by improving the face with a slight projecting moulding (shaped so as not to hold rain or dirt) which also improves the appearance. The effect may be seen in the lengths of walling erected to display the different kinds of bricks made by the firm. Rustic bricks are plastic made, very dense in texture, and free from lime, and Kirkaldy's crusting test is 354.7 tons per square foot. The company have been making high class building and engineering bricks from the same raw material for the past thirty years. The floor of the stand will be paved with their clinker pavers in "Upholland" brindle buff and "Ravenhead" red. There will also be shown a new brick partition and a brick-faced flag.

Ronuk, Ltd., might certainly be described as beauty (floor) specialists, for their preparation resembles skin-foods or other cosmetics which are made to repair the damages of wear and tear. It must be remembered that "Ronuk" is something besides a preparation which gives a polished surface; for it in addition renders that surface smooth, hard, durable and waterproof by filling up the pores of the wood. The curator of the City of Manchester Art Gallery some years ago wrote after the tenth cleaning of the parquet floors with "Ronuk" that they were in a far better con-

cabinet lavatory stands fitted with white porcelain basins of a patent and improved pattern. The H.H. gully and grease trap are also shown. In all these fittings the common disadvantages have been avoided and replaced by more sanitary and common-sense principles. A perfect working model of the Whalley Concrete and Tar Macadam Mixer may be seen mixing and delivering batches of material in under two minutes each batch. This is claimed to be the most efficient and economical mixer on the market, having a minimum of wearing parts and requiring a minimum of power to drive. Samples and particulars of Robbins Non-Set Plaster Cement may be had. This material is of great value in sealing inspection boxes and street covers of all kinds. It may also be used for jointing earthenware drains. The bronze medal of the Sanitary Institute was obtained at Brighton, 1910, and also for "Coverwell," the non-conducting material for covering steam pipes and boilers, which proves an economical and efficient commodity. Congo roofing felt has proved to be a most excellent material for roof covering, and also for damp-course work. The Parker patent earthenware pipe may also be inspected in full size sections.

The exterior of *The Silicate Paint Co.*'s stand is in the form of a cottage suggesting the Jacobean period, and is cleverly treated with Duresco in various colours to represent tiles, rough-cast, &c. The woodwork is painted with Charlton White Zinc Paint (non-poisonous). The interior shows a modern drawing room: the painted ceiling and cornice is in L snow-white Duresco, with floral decorations on

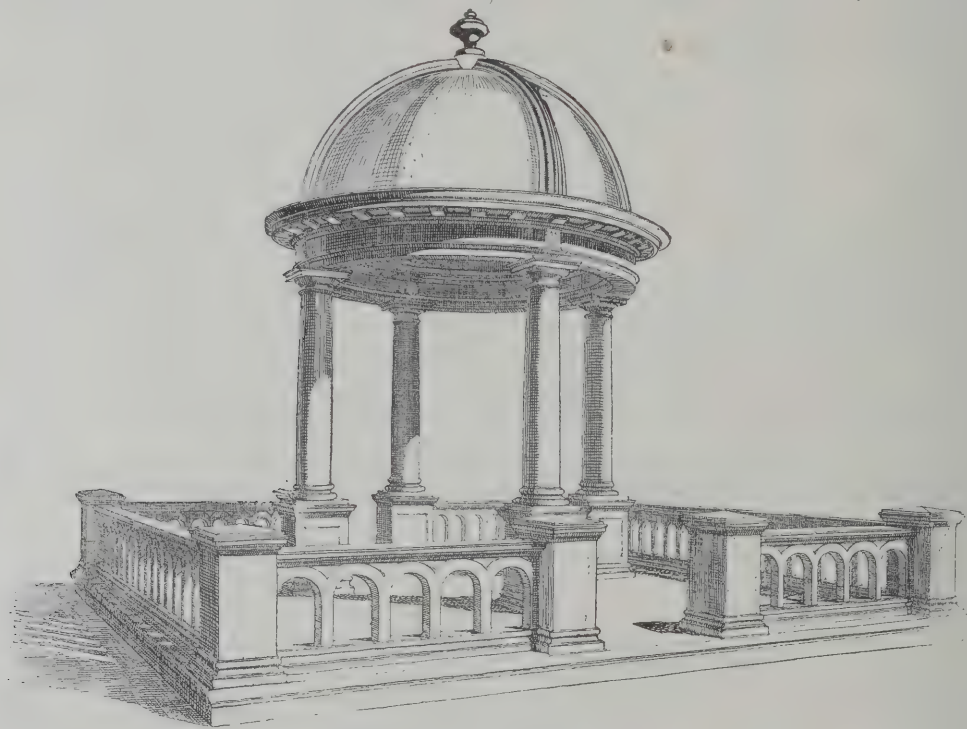


EXHIBIT OF "RONUK," LTD.

dition than when first laid down, although three hundred and fifty thousand visitors had entered the gallery. Five years later the curator again wrote, "the floors are as good as ever." That "Ronuk" is certainly sanitary is shown by the following analytical report given in the *Lancet*:—"The essentials of a good polish have been carefully studied by the manufacturers of the 'Ronuk' polishes, who have devoted special attention to the sanitary treatment of floors. Composed largely of antiseptic materials which possess the same germicidal properties as common disinfectants, but are without their disagreeable characters of smell and corrosive qualities, 'Ronuk' is an excellent floor-polish, preserving a sanitary condition of the floor, sealing up all germ harbours, and presenting a surface which pleasingly evidences an appreciation of sanitary principles."

Bristow & Co., Ltd., 20 Tothill Street, Westminster, S.W., are again showing up in the Gallery, Bay 12 (Surveyors' section). The porticos of their stand are formed from Parker's Safety Pipes and Congo patent roofing. There is altogether a very business-like appearance about this exhibit. "Tarvia," which, as a bituminous compound for roads, has so long and successfully stood the test of time, is again in evidence in samples; and full particulars may be obtained regarding its use. The H.H. series of sanitary fittings include a white porcelain closet with patent mechanical flush pipe and outgo connections, a hygienic form of seat, and special

a light grey frieze. The walls are done in C grey Duresco and the woodwork throughout is painted with Charlton Imperial Zinc White. "Duresco" is stocked in three whites and some fifty tints—intermediate tints being obtained by intermixture. Washing with cold water may be carried out when the distemper has become thoroughly hardened. A sound surface washed down and covered with a fresh coat of "Duresco" of the same colour gives splendid results at a very low cost. The main points to be remembered in applying the "King of Water Paints" are that success depends on (a) using the correct proportion of thinners; (b) obtaining uniform suction over the whole surface; (c) selecting colours suited to the conditions, and (d) not expecting two coats of "Duresco" to do instead of four or more of paint.

The Kleine Patent Fire-resisting Flooring Syndicate, Ltd., 133-136 High Holborn, W.C., show a 6-inch thick floor slab of patent reinforced hollow bricks with closed ends, reinforced both ways. The floor is twenty feet square, has a perfectly level ceiling, and there are no girders or beams protruding. Other forms of Kleine construction with reinforced hollow brick at Stand No. 117, Row F, are shown in the mansard roof with dormer windows and in hollow brick outside walls. It is just upon twenty years since this patent was first placed on the market, and since 1892 various improvements have been introduced. But the floors put

THE Architect and Contract Reporter.

FRIDAY, APRIL 21, 1911.

Published weekly, subscription 19s. per annum for Great Britain, and for Colonial and Foreign subscriptions £1 6s. 6d. business communications to the Managing Director,

P. A. GILBERT WOOD,

Publishing Offices, 6-11 Imperial Buildings, Ludgate Circus, London, England.

Telephone No. 4725 Holborn.

Branch Offices at 43 OLD QUEEN STREET, S.W., Messrs. W. HAY FIELDING & CO. being the representatives for all business purposes.

The Birmingham Offices are at 102 COLMORE ROW.

Entered in the United States of America as second-class matter.

AGENTS FOR AMERICA:

International News Co., 5 Bream's Buildings, Chancery Lane, London, England, and New York.

AGENTS FOR CANADA:

Messrs. WM. DAWSON & SONS, Ltd., 91 Church Street, Toronto, to whom all correspondence for Subscription and Advertising Rates should be made.

Subscription \$5.20.

AGENTS FOR AUSTRALIA, NEW ZEALAND AND TASMANIA:

Messrs. GORDON & GOTCH, Melbourne, Sydney, Brisbane, and Perth, Australia; Wellington, Christchurch, and Auckland, New Zealand; Launceston and Hobart, Tasmania.

SOUTH AFRICA: Central News Agency, Ltd.

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EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit the insertion of lengthy communications.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

As great disappointment is frequently expressed at the nonappearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

ARGENTINE.—A competition of plans for a hospital and school of medicine, to be erected at Rosario in celebration of the Argentine Centenary at a cost of about 149,000l. Prizes of 1,050l., 700l. and 440l. will be awarded. A copy of the conditions, &c., may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, London, E.C., where also a limited number of copies are available for distribution. Plans must be sent to the "Secretaria de la Comisión Pro-Hospital é Instituto de Enseñanza Médica del Centenario, Calle Córdoba 1230," Rosario.

ATHENS.—Sept. 25.—An international competition of plans is invited by the Greek Ministry of the Interior (Public Works) for the erection of a Court of Justice at Athens. The cost of the building must not exceed 160,000l. A first prize of 800l., and a second prize of 320l. will be awarded. The Greek Official Gazette, containing particulars (in Greek and in French) may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

BRADFORD.—June 1.—The Board of Management of the Bradford Infirmary invite plans with estimates for a new infirmary in Duckworth Lane. Mr. Keith D. Young, F.R.I.B.A., will act as assessor. Deposit 3l. 3s., which will be refunded on receipt of a bona-fide design or if block plan, instructions, &c., are returned within a month after receipt of replies to competitors' questions. The Secretary Superintendent of the Royal Infirmary, Bradford. (For further particulars see advertisement, January 13.)

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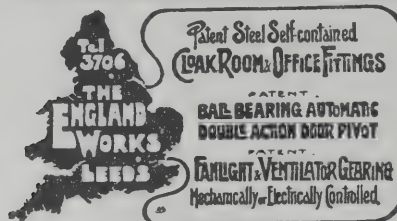
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BULGARIA.—April 30.—An international competition will be held of plans for a building which it is proposed to erect in Sofia for State and municipal offices. The following four prizes will be given, viz., 280*l.*, 120*l.*, 80*l.*, and 4*l.*. Applications must be sent to the "Kreis-Permanenz-Ausschuss," Sofia.

CHESTERFIELD.—May 15.—The Standing Joint Committee for Derbyshire invite architects practising in the county to submit designs for a Court-house and lock-up to cost 8,000*l.*. Mr. F. Baggallay, F.R.I.B.A., will act as assessor. Deposit 3*l.* 3*s.* Apply to Mr. G. C. Copstick, F.R.I.B.A., County Offices, Derby.

DEVIZES.—May 10.—The Committee of the Devizes Cottage Hospital invite competitive designs for providing a new six-bed ward at, and making a general re-arrangement of, their existing hospital (16 beds) at a maximum cost of from 200*l.* to 1,500*l.* Deposit 10*s.* 6*d.* Conditions of competition and particulars of the buildings required will be supplied to intending competitors by Mr. E. Thorp, honorary secretary, Devizes.

MANCHESTER.—May 1.—The Corporation invite designs for a Library and Art Gallery upon the Piccadilly site in the centre of the city. The Preliminary Competition closes May 1. The authors of ten selected designs will compete in the Final Competition. Mr. Reginald Blomfield, A.R.A., will act as assessor, in connection with the city architect. Apply for particulars to Mr. Thomas Hudson, Town Clerk, Town Hall, Manchester.

STOCKPORT.—April 22.—Architects desirous of entering a limited competition for the designs of the Police Station and Courts which the Corporation propose to erect are invited to forward their names and addresses, with particulars of their qualifications and experience in the erection of similar buildings, on or before Saturday, April 22, to Mr. Robert Lyde, Town Clerk, Town Hall, Stockport.

WALES.—May 5.—The Corporation of Swansea invite architects to submit designs and estimates for the Castle Street improvement. Deposit 1*l.* 1*s.*, which will be refunded on receipt of a bona-fide design or if block plan and particulars are returned within a fortnight after receipt. The architect appointed to prepare the working drawings will be paid not more than 250*l.*, and a premium of 50*l.* will be paid for the second design. Mr. S. S. Reay, F.R.I.B.A., will act as assessor. Apply to the Town Clerk, Guildhall, Swansea.

CONTRACTS OPEN.

ASHTON-UNDER-LYNE.—April 24.—For erection of Groby Council school, to accommodate 1,200 children. Deposit 1*l.* 3*s.* Mr. E. Woodhouse, F.R.I.B.A., 59 Warrington Street, Ashton-under-Lyne, and 88 Mosley Street, Manchester.

BENTLEY.—For building church room, Bentley, Doncaster. Send names and 1*l.* deposit to Mr. P. N. Brundell, architect, Princes Street, Doncaster.

BLAYDON-ON-TYNE.—May 2.—For erection of station buildings, platform roofing, &c., for the North-Eastern Railway Co. Mr. William Bell, the Company's architect, Central Station, Newcastle-on-Tyne.

BOLTON-BY-BOWLAND.—April 24.—For erection of two cottages, additions to two houses, and a stable and cow shed on the Bolton Hall Estate. The Coffee House, Bolton-by-Bowland, Yorks.

BOSTON.—April 25.—For repairs and alterations to the chemical manure works, for Hubbert's Bridge, belonging to Messrs. W. G. Hammond & Co., Ltd. Mr. W. Willcock, secretary, 2 Main Ridge, Boston, Lincs.

BOURNE.—For erection of a dwelling-house at Bourne. Mr. R. Agnew, architect and surveyor, Bourne, Lincs.

BRADFORD.—For the various works required in extension of incineration works, Laisterdyke, for Messrs. Waring & Co. Send names to Mr. T. H. Gamble, architect, 9 Bond Street, Bradford.

BROMLEY.—April 25.—For widening Mason's Hill Bridge, Bromley, Kent. Mr. Frederick W. Ruck, county architect, 5 Week Street, Maidstone.

BUSHEY.—May 3.—For (a) erection of a caretaker's cottage and (b) construction of a circular sedimentation tank 30 feet diameter by 20 deep, with certain alterations to existing sedimentation tanks, for the Bushey Urban District Council. Deposit 2*l.* 2*s.* Mr. E. E. Ryder, engineer and surveyor, Council Offices, Bushey, Herts.

BUXTON.—For erection and completion of a cottage hospital at Sherbrook. Messrs. Bryden & Walton, architects, 3 George Street, Buxton.

CARLISLE.—April 28.—For erection of disinfecting chambers at Fever Hospital or House of Recovery (whole tenders). Mr. J. W. Benwell, architect, 28 Lowther Street, Carlisle.

CHEADLE HULME.—April 28.—For erection of new county police station. Deposit 1*l.* Mr. H. Beswick, F.R.I.B.A., county architect, Newgate Street, Chester.

COSBY.—May 5.—For erection of a new elementary school and handicraft centre at Cosby, Leics., together with out-offices, drainage, and other works connected therewith. Deposit 10*l.* 10*s.* The County Education Office, 33 Bowling-green Street, Leicester.

DROYLSDEN.—May 17.—For erection of an elementary school for 810 children in Fairfield Road, Droylsden, Lancashire. Deposit 2*l.* Mr. H. Littler, county architect, 16 Ribblesdale Place, Preston.

EDINBURGH.—April 22.—For erection of two two-storey cottages for attendants at Dechmont village, Uphall, for the Edinburgh District Board of Lunacy. Messrs. Peter Lawrence & Co., surveyors, 50a Frederick Street, Edinburgh.

EDINBURGH.—April 27.—For the following works in connection with the construction of new science laboratories at George Heriot's Hospital, for the Governors, viz.:—(1) Excavator, mason, and brick work; (2) carpenter, joiner, and glazier work; (3) plumber work; (4) slater work; (5) plaster and concrete work; (6) painter work. The Superintendent of Works, 20 York Place, Edinburgh.

ELTHAM.—May 3.—For the erection of Eltham new Post Office, Kent, for the Commissioners of H.M. Works and Public Buildings. Deposit 1*l.* 1*s.* The Postmistress, Eltham, and H.M. Office of Works, Storey's Gate, London, S.W.

ERDINGTON.—April 26.—For the erection of a park-keeper's lodge and children's lavatories near the Witton Hall entrance, and two lavatories near the Rosary Road entrance, at Brookvale Park, and for the erection of lavatories and a pavilion shelter at Short Heath Park. Deposit 2*l.* 2*s.* Mr. H. H. Humphries, engineer, Council House, The Park, Erdington.

HALIFAX.—April 29.—For the various works required in the conversion of lodge into semi-detached villa, &c., at King Cross. Messrs. Medley Hall & Son, architects, 1 Harrison Road, Halifax.

HORNCHURCH.—April 26.—For the erection of an infants' school and band and drill room at their cottage homes, Hornchurch, near Romford, Essex, for the Guardians of Saint Leonard, Shoreditch. Mr. F. J. Smith, F.R.I.B.A., architect, Parliament Mansions, Victoria Street, S.W.

HORWICH.—May 10.—For erection of an infants' school to accommodate 400 children, at Horwich, near Bolton. Deposit 2*l.* Mr. H. Littler, county architect, 16 Ribblesdale Place, Preston.

HOVE EDGE.—April 26.—For erection of a district church at Hove Edge, near Brighouse. Mr. W. H. Wood, F.R.I.B.A., architect, Durham.

IRELAND.—April 24.—For an addition to the Parcels Offices at Dundalk Station, for the Great Northern Railway Co. (Ireland). Deposit 1*l.* The Chief Engineer's Office, Amiens Street Terminus, Dublin, and the District Engineer's Office, Belfast.

IRELAND.—April 24.—For the erection of County Council Offices at Navan, Co. Meath. Deposit 1*l.* 1*s.* Mr. J. J. Inglis, architect, 5 Nassau Street, Dublin.

IRELAND.—April 24.—For erection of dwelling-house and shop at the Douglas Road, Cork. Mr. J. F. M'Mullen, M.R.I.A.I., architect, 30 South Mall.

IRELAND.—April 27.—Separate tenders are invited for builder, plumber, painter, and heating engineer works at Riverview, Londonderry. Messrs. R. E. Buchanan & Co., architects, Castle Street, Londonderry.

KEARSLEY.—April 26.—For the erection of a new elementary school at Kearsley for 504 children, with accommodation for manual instruction, cookery and laundry work. Deposit 2*l.* Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

KENDAL.—April 25.—For building a detached house on the Natland Road. Mr. J. Stalker, jun., architect, 57 Highgate, Kendal.

LONDON.—April 22.—The Corporation of London invite tenders from house-breakers and others for the demolition of certain premises in Bishopsgate, Pindar Street, &c., City, and for taking fixtures, fittings, machinery, &c., therein, together with the loose effects. Deposit 1*l.* The Office of the Engineer, Guildhall, E.C.

LONDON.—April 27.—For sundry repairs at the stone buildings of the Infirmary, Raine Street, E., for the Guardians of St. George-in-the-East. Mr. T. W. Aldwinckle, F.R.I.B.A., architect, 20 Denman Street, S.E.

LONDON.—May 4.—For the erection of a committee-room at the Workhouse, Swaffield Road, Wandsworth, S.W. Deposit 1*l.* Mr. F. W. Piper, clerk, Guardians' Office, St. John's Hill, Wandsworth, S.W.

LONDON, N.—May 10.—For certain building work at the Nurses' Home, Edmonton Workhouse, Upper Edmonton, in the erection of an escape stairs and alterations to an existing staircase, for the Guardians of Edmonton Union. Mr. J. C. S. Mummery, architect, 13 Fitzroy Square, W.

MILE END.—May 12.—For erection and completion of several detached buildings at Mile End, Colchester, for the Visiting Committee of the Essex County and Colchester Borough Lunatic Asylum. Send names and 50*l.* deposit by April 24 to Mr. W. P. Gepp, clerk to the Visiting Committee, New Street, Chelmsford.

MORLEY.—April 24.—For the various trades required in extension to the fire station and workshop at the rear of the Town Hall. Mr. W. E. Putman, A.M.I.C.E., borough engineer and surveyor, Town Hall, Morley, Yorks.

NEWBURN.—For erection of an electric theatre. Send names to Mr. T. R. Eltringham, architect, Throckley, Newburn-on-Tyne.

PEGSWOOD.—April 25.—For the whole of the work required in connection with proposed cemetery at Pegswood, Northumberland, for the Pegswood Parish Council, comprising chapel, lodge, boundary walls, land drainage, &c. Deposit 1*l.* 1*s.* Mr. J. S. Clark, Bothal.

PENISTONE.—For the various works required in erection of new offices, Penistone, Yorks., for Messrs. W. Gittus & Son. Send names to Messrs. Crawshaw & Wilkinson, architects, 13 Regent Street, Barnsley.

PLYMOUTH.—April 24.—For erection of a new parish hall, class-rooms, &c., in connection with and on a site adjoining St. Matthias Church, Tavistock Road. Send names by April 24 to Messrs. Carder & Carder, architects and surveyors, 24 Lockyer Street, Plymouth.

PONTELAND.—April 24.—For the erection of two blocks of cottages at the Newcastle-upon-Tyne Cottage Homes. Send names and 2*l.* deposit to Mr. G. Walker, clerk to the Guardians, 127 Pilgrim Street, Newcastle-upon-Tyne.

PORTLAND.—April 28.—For the construction of three conveniences in the Victoria and Easton Square Gardens. Deposit 1*l.* 1*s.* Mr. R. S. Henshaw, engineer and surveyor, Council Offices, New Road, Portland.

READING.—April 27.—For the execution of the works necessary in adaptation of certain existing buildings at the corner of Valpy Street and Forbury Road for the purposes of a justices' room, police station and quarter and petty sessions house, and for the erection of new buildings for cells and an inspector's house in connection therewith, for the Town Council. Send in names to Mr. S. Slingsby Stallwood, F.S.A., architect, 27 Market Place, and 2*l.* 2*s.* to the Borough Accountant, Valpy Street, Reading.

RICHMOND.—May 1.—For carrying out the building of new drill hall premises, Richmond, Surrey, for the Territorial Force Association. Messrs. Jarvis & Richards, architects to the Association, 10 Queen Anne's Gate, Westminster, S.W. Send 1*l.* 1*s.* deposit and applications by April 21 to Messrs. Robinson & Roods, quantity surveyors, 8 New Court, Carey Street, Lincoln's Inn, W.C.

ROMFORD.—April 25.—For erection of Romford new Post Office. Deposit 1*l.* 1*s.* H.M. Office of Works, Storey's Gate, London, S.W.

RUGBY.—April 22.—For erection of a smallpox hospital (for six beds) and cottage and works of drainage and water supply at Harborough Magna, near Rugby, also for alterations and sanitary works at the infectious hospital at Lawford Heath. Deposit 1*l.* 1*s.* Mr. T. W. Willard, architect, Rugby.

SCOTLAND.—April 22.—For the erection of a refuse destructor in connection with their institution at Merryflatts, Govan, for the Govan Parish Council. Specifications and information can be had from Mr. J. Thomson, governor, Govan Poorhouse, Govan.

SALFORD.—April 24.—For erecting new infants' school in Nashville Street. Deposit 1*l.* 1*s.* Messrs. Woodhouse, Corbett & Dean, 100 King Street, Manchester.

SALFORD.—April 27.—For construction of reinforced concrete underground convenience, also a public urinal in brick-work. Borough Engineer, Town Hall, Salford.

SCOTLAND.—April 24.—For the mason, carpenter, slater, plumber, plaster, painter and glazier, and iron works of warehouse to be built at Knockando Distillery, Knockando, for Messrs W. and A. Gilbey, Ltd. Mr. C. C. Doig, architect, Elgin.

SCOTLAND.—April 25.—For the mason, carpenter, slater, plaster, and painter works of additions to property, Shore Street, Lossiemouth. Mr. A. Morrison, plumber, Lossiemouth, or Mr. J. Wittet, architect, Elgin.

SEAFOORD.—May 1.—For erection of a refuse destructor house and chimney at the Sewage Pumping Station, Brooklyn Road, together with the inclusion in the contract of the supply and erection by Messrs. Meldrum Bros., Ltd., of a two-cell refuse destructor and boiler, and works incidental thereto. Messrs. Pollard & Tingle, engineers, 31 Old Queen Street, Westminster, or Mr. W. H. Pawson, clerk, 3 Clinton Place, Seaford.

SHEFFIELD.—April 27.—For supply of materials and works comprised in the extensions and alterations to the existing sub-station in Chapel Lane, Sheffield, for the Electric Light Committee. Deposit 1*l.* 1*s.* Mr. S. E. Fedden, general manager and engineer, the Corporation Electric Supply Department, Commercial Street, Sheffield.

SLOUGH.—April 25.—For erection of a boiler-house and the supply and fixing of a boiler therein at the workhouse, for the Guardians of Eton Union. Mr. R. H. Barrett, clerk, Slough.

SLOUGH.—May 2.—For erection of a bakery at the rear of the central premises, High Street, for the Slough and District Co-operative Society, Ltd. The Society's Office, High Street. Mr. W. T. Whalley, managing secretary.

SOUTH MOOR.—April 26.—For erection of 31 houses at South Moor, Durham. Mr. J. Wm. Rounthwaite, A.R.I.B.A., architect, 13 Mosley Street, Newcastle-on-Tyne.

STOCKTON HEATH.—April 28.—For erection of county police station at Stockton Heath, Cheshire. Deposit 1*l.* Mr. H. Beswick, F.R.I.B.A., county architect, Newgate Street, Chester.

STRATFORD-ON-AVON.—April 26.—For new model laundry, Grove Road. Send in names and 10*s.* 6*d.* deposit by April 26 to the architects, Messrs. Knight & Hebery, 5 Rother Street, Stratford-on-Avon.

WALES.—April 25.—For erection of a drill hall and instructor's quarters at Cwm, Mon., for the Monmouthshire Territorial Force Association. Deposit 1*l.* 1*s.* Messrs. Habershon, Fawcner & Co., F.R.I.B.A., architects, 41 High Street, Newport.

WALES.—April 26.—For general repairs, renovations, and painting work to Jersey Marine Hotel, Tower, and other buildings at Briton Ferry Road, Neath. Mr. J. Cook Rees, architect, Neath.

WALES.—April 29.—For erection of a new church at Ynysmudw, Pontardawe. Mr. J. C. Rees, architect, Parade Chambers, Neath.

WALES.—April 29.—For erection of a house and shop, &c., at Aberbeeg, Mon. Mr. D. J. Lougher, architect, Bank Chambers, Pontypool.

WALES.—May 1.—For erection of 16 houses at Brecon Road, Merthyr Tydfil, for the Brecon Road Building Club. Mr. O. P. Bevan, architect and surveyor, "Express" Chambers, Merthyr Tydfil.

WALES.—May 1.—For erection of from 16 to 28 semi-detached villas at Ebbw Vale, Mon., for the Badminton Grove Building Club. Mr. W. Harris, architect and surveyor, Bank Chambers, Bargoed.

WALES.—May 2.—For erection of a Great Western Railway station at Llancaiach, Glam. The office of the engineer, Newport Station, Newport.

WALES.—May 2.—For the erection of a goods shed, stable, offices, &c., at Cremlin (Mon.). The office of the engineer, Newport Station, Newport.

WALES.—May 5.—For the erection of a school at Craigygeos (Penygraig), to accommodate 400 boys, 400 girls, and 400 infant scholars, for the Rhondda Urban District Council. Send 2*l.* 2*s.* to the accountant. Mr. J. Rees, architect, Hillside Cottage, Pentre.

WALES.—May 6.—For erection of 29 or more workmen's dwellings at the Old Gantre, Ebbw Vale, Mon., for the Beaufort Building Club. Mr. W. Harris, architect and surveyor, Bank Chambers, Bargoed.

TENDERS.

BARROW-IN-FURNESS.

For erection of a fire station in Abbey Road.

Accepted tenders.

Neal, excavator, concreter, and brick-layer, &c.	£2,900 0 0
H. Britton, carpenter and joiner	1,298 0 0
M. A. Ross, plumber, painter, glazier.	485 0 0
W. A. Paul, plasterer and slater	405 10 0
Blackman & Sons, Preston, ironfounders	319 13 0
Varley, mason	53 5 6

Rest of Barrow-in-Furness.

CROMPTON.

For construction of sewerage works, for the Crompton Urban District Council. Messrs. J. P. WILKINSON & SON, M.M.I.C.E., engineers 301 to 304 Cathedral Street, Manchester.

Morley & Sons	£13,256 6 8
Turner	10,160 11 4
Brebner & Co.	9,371 12 7
Cowburn & Sons	8,888 11 4
Hayes & Sons	8,348 14 9
Edmondson & Wyatt	8,098 0 0
Price & Co.	7,871 9 5
Graham	7,767 14 3
Boswell	7,592 8 0
Hyslop & Co.	7,550 17 2
FREEMAN & SONS, Hollinwood (accepted)	7,487 0 0
Johnson & Son	7,292 0 0

IPSWICH.

For attendant's lodge, shelter, and stable in Gippeswyk. Mr. E. BUCKHAM, borough surveyor, Town Hall.

Death	£777 0 0
Sadler & Sons	753 10 0
Fisk & Co.	748 11 0
Kenny	739 0 0
James & Gower	731 0 0
Gayford	722 10 0
Jepson	697 0 0
Grimwood & Sons, Ltd.	685 0 0
G. A. Kenney	739 0 0
S. A. Kenney	675 0 0
Cundall	671 15 0
Green	655 0 0
Parkington & Son	655 0 0
C. BARRETT, Ipswich (accepted)	605 0 0

LONDON.

For alterations and additions to existing drill hall premises, St. George's Road, Wimbledon, for the Territorial Force Association of the County of Surrey. Messrs. JARVIS & RICHARDS, architects, 10 Queen Anne's Gate, Westminster, S.W. Quantities by Messrs. ROBINSON & ROODS, 8 New Court, Carey Street, Lincoln's Inn, W.C.

S. Roberts, Ltd.	£1,163 0 0
Roberts & Co.	1,065 0 0
Rogers	1,030 0 0
Price & Price	1,015 0 0
Harris	979 7 6
Sullock & Sons	944 0 0
Chessum & Sons	930 0 0
Johnson & Co.	883 0 0
F. & G. Foster	878 0 0
Webster & Son	864 0 0
Lole & Co.	852 0 0
Hayes & Co.	850 0 0
Smith & Sons	840 0 0
Price	837 0 0
Fletcher	828 0 0
Gibson & Co.	825 0 0
W. F. Blay, Ltd.	819 0 0
Hann	815 10 0
Hammonds	798 0 0
BURGESS & SONS, Wimbledon (accepted)	735 0 0

For alterations and additions to their Electricity Works, High Street, Mortlake, for the Barnes Urban District Council. Mr. G. B. TOMES, A.M.I.C.E., surveyor, Mortlake, S.W.

Skinner	£490 0 0
Hampton	475 0 0
Wells & Co.	456 0 0
Fletcher	446 0 0
LOWE, Barnes (accepted)	420 0 0
Peddle	419 0 0

LONDON—continued.

For building new drill hall premises, Mitcham Road, Croydon, for the Territorial Force Association of the County of Surrey. Messrs. JARVIS & RICHARDS, architects, 10 Queen Anne's Gate, Westminster, S.W. Quantities by Messrs. ROBINSON & ROODS, 8 New Court, Carey Street, Lincoln's Inn, W.C.

Fireproof Partition and Spandrel Wall Co.	£3,201 0 0
Pasterfield & English	2,599 0 0
McLaughlin & Harvey	2,411 0 0
Cropley Bros.	2,394 0 0
Downs	2,387 0 0
Truett, Steel & Sons	2,390 0 0
Fryd	2,351 0 0
Parker & Sons	2,337 0 0
Kirk & Randall	2,334 0 0
J. & M. Patrick	2,340 0 0
Munday & Sons	2,326 0 0
Peddle	2,308 0 0
Honour	2,305 0 0
F. & G. Foster	2,288 0 0
Burgess & Sons	2,280 0 0
Harbrow	2,275 0 0
Hann	2,260 0 0
Lole & Co.	2,259 0 0
Everitt & Sons	2,245 0 0
Saunders	2,245 0 0
Minter	2,237 0 0
W. F. Blay, Ltd.	2,218 0 0
Field & Cox	2,200 0 0
Gibson & Co.	2,180 0 0
Smith & Sons	2,160 0 0
Cook & Son	2,142 0 0
Price	2,137 0 0
Smith & Sons	2,139 0 0
GATHERCOLE BROS., Norbury (accepted)	2,080 0 0
Fletcher	2,072 0 0
Tonge	1,899 0 0

For repairs and external varnishing to be done in the board-room, library, lavatory, and chapel and to 176 houses and lodges of the Licensed Victuallers' Asylum, Asylum Road, Old Kent Road, Camberwell, S.E. Mr. C. J. WESTON, secretary; Mr. W. F. POTTER, architect. Quantities prepared by Mr. C. R. GRIFFITHS, surveyor, 4 and 5 Warwick Court, Gray's Inn, W.C.

H. King & Son	£970 0 0
Charles Ansell	948 0 0
T. W. Helsdon	831 10 0
Dearing & Sons	657 15 0
W. H. King	535 4 0
R. Maskall	445 10 0
A. J. Pickard	412 0 0
Garner & Co.	374 0 0
Dawes & Co.	372 0 0
W. CLARK & Co., Nunhead (accepted)	330 0 0

For repairs at three houses, Wade's Place, Nunhead Green, for Committee of the Metropolitan Beer and Wine Trade Asylum (adjoining). Mr. F. G. HOLMER, secretary; Mr. W. F. POTTER, architect.

W. CLARK & Co., Nunhead (accepted).

SANDBACH.

For erection of an upper standards Council school for Congleton Union Area. Messrs. A. PRICE & SON, architects, Sandbach.

Dolan & Son	£6,500 0 0
Storrs, Sons & Co.	6,349 0 0
Matthews	6,240 0 0
Jackson & Sons	6,231 0 0
Wellerman Bros.	6,197 0 0
Stringer	6,150 0 0
Brown & Son	6,132 0 0
Bennett Bros.	6,097 0 0
HUXLEY, Malpas (accepted)	6,050 0 0

TRURO.

For erection of 17 artisans' dwellings, for the Town Council, at Waterloo. Mr. F. A. BARNES, A.M.I.C.E., city engineer, Truro.

Woodman & Son	£3,392 0 0
Carkeek	2,986 0 0
Stanbury	2,890 0 0
Colliver	2,769 0 0
Parkin	2,650 10 0
Bennett	2,545 0 0
Clare	2,537 0 0
C. & J. HARRIS, Truro (accepted)	2,210 0 0

WALES.

For erection of an infants' school at Mount Pleasant, Merthyr Vale.			
Sullivan	£4,674	16	3
Williams & Son	4,177	13	3
James	4,283	0	0
D. Davies	4,400	0	0
Jones	4,025	0	0
E. P. Davies	3,999	0	0
A. J. COLBORNE (accepted)	3,769	17	0

For rebuilding the portion of Penydarren old schools recently damaged by fire, for the Merthyr Tydfil Education Authority. Mr. J. LLEWELIN SMITH, architect, Aberdare.

Jones Bros	£1,900	0	0
J. Williams & Sons	1,886	0	0
Bond	1,801	9	11
E. Williams & Sons	1,776	8	7
JENKINS BROS., Penydarren (accepted)	1,642	0	0

For erection of an elementary school at Ruabon to accommodate 288 scholars. Mr. W. D. WILES, county architect and surveyor, Wrexham.

Jones	£5,970	0	0
P. R. Williams	5,535	0	0
Lewis Bros.	5,415	15	0
Price Williams	5,360	0	0
Humphreys	5,414	0	0
Johnson	5,230	0	0
S. & J. Davies	5,039	0	0
T. L. Davies	4,998	17	0
J. & C. Davies	4,950	0	0
Jones & Evans	4,860	0	0
Jenkins	4,896	0	0
Griffiths	4,500	0	0
DALLOW & SONS, Birmingham (accepted)	4,435	0	0

WEST HAM.

For construction of a bridge about 60 feet span, for single line of traffic, at Cook's Road, Stratford. Mr. J. G. MORLEY, borough surveyor, West Ham, E.

Kirk & Randall	£2,024	0	0
Myall & Upson	2,003	0	0
Coxhead	1,997	0	0
Kavanagh & Co.	1,997	0	0
Kavanagh & Co. (alternative)	1,523	0	0
Garrett & Son	1,973	0	0
Garrett & Son (alternative)	1,598	0	0
E. C. & J. Keay, Ltd.	1,944	0	0
Leslie & Co.	1,753	0	0
Rowlingsons & Co.	1,711	10	9
Moss	1,700	0	0
Jackson	1,675	12	3
Strong & Co.	1,648	0	0
Braithwaite & Kirk	1,610	11	0
C. Wall, Ltd.	1,602	0	0
C. Wall, Ltd. (alternative)	1,297	0	0
Pattinson & Sons	1,582	16	0
Findlay & Co.	1,575	8	1
Muirhead & Co.	1,563	7	3
Elliott & Co.	1,545	15	0

For erection of addition to tramway car sheds, Greengate Street, Plaistow. Mr. J. G. MORLEY, borough surveyor, West Ham, E.

Brown	£8,069	10	0
Myall & Upson	7,824	0	0
Dawson	7,740	4	5
Nightingale	7,677	0	0
Strong & Co.	7,599	0	0
Fryd	7,268	0	0
Wall	7,220	0	0
J. & M. Patrick	7,140	0	0
Luton	6,977	0	0
Coxhead	6,904	18	0
Leslie & Co.	6,889	0	0
Kirk & Randall	6,779	0	0
Moss	6,770	0	0
Webster & Son	6,697	0	0
Roberts & Co.	6,594	0	0
H. J. Carter	6,571	0	0
Warner, Lown & Co.	6,486	0	0
Pattinson & Sons, Ltd.	6,426	0	0
Jerram	6,169	0	0
Woollaston & Co.	6,160	0	0
Symes	5,944	0	0
HORSWILL, Forest Gate (accepted)	5,855	0	0

THE BUILDING TRADES EXHIBITION.

THE bold step of transferring the venue of the exhibitions dealing with the building trade from Islington to Kensington has been amply justified by results; and for the third of the new series (which will be officially opened by Mr. Leonard Stokes, P.R.I.B.A., to-morrow), the promoters have had the pleasantly disagreeable duty of refusing applications for space. This increasing keenness in the demand for stands is the surest proof of the benefits, either direct or indirect, which exhibitors find they derive from their expense and trouble. The right class of visitors are also being attracted in increasing numbers. It will be found that the 1911 exhibition is second to none of its predecessors. We are enabled to give this week an account of a few of the many stands.

As roofing specialists of practically a century's standing, Messrs. Roberts, Adlard & Co., Bermondsey Wall, S.E., have every reason to so design the roof of their stand as to demonstrate the practical effect of various covering materials. The exhibit should serve a useful purpose in revealing to visitors the wide selection which is at the disposal of house-builders for covering their roofs, as well as in showing work like wall and floor tiling, slate masonry, oak shingling, &c. Messrs. Roberts, Adlard & Co. have included reproductions of old tiling under the names of "Antique" and "Sussex Valley," and these may be compared with the genuine old tiles or with colour-glazed tiles displayed on screens inside, or with their hand-made roof tiling. There are, of course, several kinds of slates, such as "Eureka" green, "Viking"

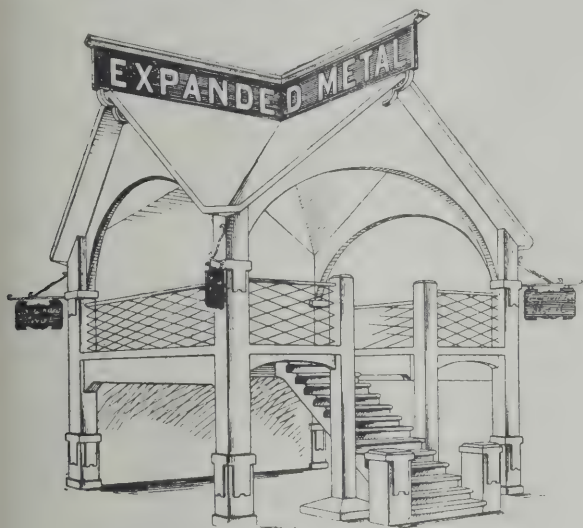


green, and "Permanent" green English slates, "Penryn" variegated, Bangor and Portmadoc. Another covering shown is Racephas, which is a stone slating suitable for high-class work; it has varying tones, and is quarried in its natural beds. The possibilities of slate masonry are suggested by a slab 8 feet by 7 feet by 2 inches thick, which was specially quarried for the exhibition. Other branches of the firm's work are seen in the wall-tiling and the floor-tiling, the specimens of slate for electrical purposes, enamelled slate, and green and silver-grey slate-slabs.

Messrs. Osler, Ltd., 100 Oxford Street, W., have an interesting exhibition of electric fittings, essentially English in character, and embracing styles from Gothic to late Georgian times. The development begins with a beautifully-executed electrolier in wrought iron, suggesting fifteenth century Gothic. Next comes a dining-room corona fitting, also in wrought iron, which gives evidence of a careful study of Elizabethan strap-work. The Stuart period is represented by a 2-foot sconce, finished to represent old silver. The late English Renaissance is recalled by some charming adaptations of old silver work. The needs of the decorator have been provided for in the creation of types harmonising with the various eighteenth century styles associated with Chippendale, the Brothers Adam, Sheraton, and others. In the revival of crystal glass chandelabra, Messrs. Osler use their experience of over a century to turn out some beautiful models. A reproduction of an old Waterford glass chandelier is of special interest. For metal filament lamps they have produced cut-glass bowls mounted in metals, which convert the glare into a perfectly-diffused light. Altogether this exhibit is one of real interest, showing as it does that the work of the modern craftsman can sometimes emulate that of the old. Great credit is due to the enterprise of Messrs. Osler and to the versatility of Mr. Herbert Papper, their art director.

lown nineteen years ago are still perfectly sound and reliable, as the materials used cannot deteriorate. These floors have made considerable progress in this country since they were exhibited at Olympia four years ago. Two recent contracts are for the new county asylum at Whalley, Lancs., and for a building in course of erection for the Calico Printers' Association in Manchester, which together represent a floor area of more than fifteen acres. It may be mentioned that all work is carried out by the Syndicate and that all material and labour is British.

As the Exhibition may be opened from their stand, the *Expanded Metal Company, Ltd.*, of London and West Hartlepool, have erected an unique construction so far as exhibitions are concerned. The stand, No. 156, Row G, is situated near the Addison Road entrance, the position that the Company has always occupied at Olympia. The exhibit is of reinforced concrete throughout, no structural steel framework having been used, and it shows on a limited scale the application of expanded steel reinforcements for concrete work and expanded metal lathings for plaster work. It comprises full-size examples of reinforced concrete column footings, columns,



beams, stairs, floors, arches, and roofs, the whole being in the form of a building as here shown. The method and arrangement of the reinforcement is clearly displayed. The well-known diamond mesh expanded steel, together with a more recent product—a rib mesh expanded steel—is used as reinforcement for floors, walls, and stairs, while expanded steel bars are used for columns, beams, &c. A hollow and a solid monolithic plaster partition on the expanded metal system are shown, together with a novel application of a suspended ceiling to a reinforced concrete floor. The exhibit shows incidentally that if skilfully handled reinforced concrete on the expanded metal system is an exceedingly rapid method of construction. The shuttering or timber formwork was commenced on Monday, April 10, and will be removed and the stand finished and made ready for opening day, April 22, within thirteen days in all, including Sunday and Easter holidays.

The Calmon Asbestos and Rubber Works, Ltd., Tower Hill, E., have constructed a neat little asbestos bungalow with exterior and interior walls and ceilings covered with "Calmon" asbestos slate sheets, and the roof covered with "Calmon" asbestos slate tiles. The sheets are fixed to a framework of uprights and cross-pieces, and the joints of the exterior lining are covered with strips. The general appearance is similar to half-timbered style. Asbestos slate buildings are erected to a very great extent in the colonies, where they are gradually taking the place of corrugated iron, on account of the non-conductivity of the material, and the fact that it does not corrode by the varying influences of temperature. There is a growing demand also for "Calmon" asbestos slate manufactures for the home trade, and hundreds of roofs of dwelling-houses, skating rinks, drill halls, workshops, barracks, &c., &c., are covered with "Calmon" slates. The sheets are chiefly utilised for ceiling work and wall lining.

One of the most striking novelties at Olympia will be provided by the Stand of *Thos. Parsons & Sons*, the well-known Varnish and Enamel Manufacturers, who are making their first appearance at the Building Trades Exhibition. This original stand represents the fore part of a modern battleship, and every care has been taken to render the model as

accurate as possible. At the back, tier upon tier above the upper deck, are conning tower, chart house and upper bridge; below, on the main deck, which forms the floor of the stand, is the barquette with its pair of heavy guns. Other guns—quick-firers—protrude from behind the armoured bulkhead which supports the upper deck. The spacious reception room is arranged at the back of this bulkhead, and here will be shown a whole range of samples, panels, &c., which could not be displayed outside the stand without spoiling the effect. A prominent display will, of course, be made of "Endelline" and "Endelflat"—enamels which have gained much favour in the high class decorating trade—and some new colours may be looked for, notably a particularly brilliant and permanent green, to which the name "Leaf Green" has been given. "Lacreite," the low-priced enamel from which, however, excellent results may be expected, will also be a strong feature; and with a good exhibit of varnished work, specimens of "Mosaico" Metallic Paint, and sample panels illustrating the obliterating power of the new lead-free undercoating "Opako," the show room should be well worth a visit from any one—whether architect or painter—interested in house-decoration. The stand itself is finished in white enamel—"Endelline"—and attention is drawn by Messrs. Parsons to the very large plain surfaces which have had to be covered, and the circumstance that the enamel is displayed on the flat where it can be examined as easily as on the round.

Messrs. Walter Carson & Sons are in Row K, No. 222, where they have twice the space taken at the last Exhibition. A special feature is made of "Coverine" Flat White Undercoating. This paint has met with great success, and is worthy of the painter's attention. Trade users are invited to visit the stand and try "Coverine" for themselves. A panelled screen erected in the centre displays decorative flat japans of various colours. A flat white enamel suitable for the interiors of hotels, &c., is also to be shown. Glazed sash bars showing "Plastine" against genuine linseed oil putty, after twelve months' exposure, will be on view. The results can also be observed of employing "Vitrolite," "Coverine," and "Japolite" on bare wood. The firm's high class decorators' varnishes and colours (dry) are also shown.

Messrs. James Latham, Ltd., 124 Curtain Road, London, whose interesting exhibit has previously been in the Annexe, have secured a more important position in Row H, 161, in the Main Building not far from the Addison Road entrance. This eminently practical exhibit should not be overlooked by either architect or builder; for to some excellent figured mahogany, oak, walnut and teak are added striking examples of lower priced teak and mahogany, which seem most reasonable at the prices quoted. In one of these woods called "Mahoborn," some finished doors, newels, handrails, and a small shop front show its practical utility. Among other good lines are examples of English oak squared up ready for use as well as wide quartered boards and floorings for church work. The mouldings from this firm's Mahtal Mills have a degree of finish which points to up-to-date machinery. Three ply boards in all woods, and in a variety of sizes look very useful for panels and similar work. The marqueterie work for panels, facias, and stall boards, &c., and the hard-wood veneers will appeal to shop-fitters and decorators generally.

Messrs. Chance Brothers & Co., Ltd., give an excellent idea of the comprehensive uses of glass for modern building purposes. They show Vitreous Glass Tiles for walls and floors, fireplaces, &c.; panels showing tile schemes in various colours and sizes, and also wall and floor mosaics in similar material. The casements glazed in Flemish glass in large and small patterns display a distinctive type of ornamental glass which for elegance and effectiveness is unique for the best class of work. Lovers of old glass will be interested in the small lights with Old English Crown Glass and genuine Crown Bullions. This glass is still made, but only by the exhibitors, according to the actual mediæval process, and is therefore the genuine Old English Crown, which has never been equalled for its surface. Mention should also be made of the samples of Extra White Double Rolled Cast glass, specially adapted by its pure whiteness for studios, picture galleries, and the best work in roof glazing. The exhibit finally includes samples of Muffled, Figured Rolled, Cathedral, Plain Rolled and Rough Cast Plate and other glass. On this stand will also be shown the Maximum Daylight Glass, supplied by the Maximum Light Window Glass Co., of 28 Victoria Street, S.W.

Messrs. C. Jennings & Co., Bristol, show a wide variety of timber goods. These include a flight of stairs; deal and hardwood doors panelled and for glass; round turned and square

cut newels and balusters; garden gates; fretcut grilles; arches and balcony balusters; a shop front; fencing; windows and mantelpieces in deal and hardwood; mouldings; electric light casings, and woodwork of various descriptions. The "Smokure" chimney pot must not be omitted from the list. A souvenir rule—four-fold, brass jointed—will again be sold at 7d. each. C. Jennings & Co. manufacture doors, windows, and other joinery to compete for export to any part of the world.

Messrs. Davis, Bennett & Co., Horseferry Road, S.W., have arranged four model bathrooms similar to those fitted at the Carlton Hotel, Hotel Cecil, and other hotels. These bathrooms are fitted up in various styles, and show what can be obtained for an outlay ranging from 12l. to 100l. There is a similar choice for different purses in the various forms of water closets and urinals. Specimens are also included of tiling, marble wall-linings, sinks, hospital sanitary appliances, and lavatories, suitable for ships, mansions, hotels, clubs and artisans' dwellings.

The Standard Range and Foundry Co., Ltd., Watford, Herts. (London showrooms, 106 New Bond Street, W.), have arranged their stands as an old English oak panelled room, decorated with antique copper interiors and hoods, together with some of their high-class wrought iron work. The interiors and stoves are fitted with the successful patent "Burkone" fire, which is the *pièce de résistance* of the exhibit. About a dozen suites of chimney-piece and interior suggest what can be done to meet the demand for both expensive and cheap property. In addition to this they are showing a municipal combination heating and cooking stove, which has been supplied to many Corporations, week-end dwellings, &c. They have also a new invention, a combination of portable copper and bath heater. This is an ingenious idea, whereby the ordinary domestic copper not only performs the ordinary duties, but will, when occasion demands, supply hot water to sink and sufficient hot water for a bath on the next floor. This patent is to be known as "The Conqueror" combination copper and bath heater. Besides the foregoing, a selection of brassfoundry and ironmongery, and a quantity of mantel registers designed by prominent architects and artists will be shown.

Messrs. John Daymond & Son, architectural sculptors, Vauxhall Bridge Road, S.W., include in their interesting exhibit models for stone carving executed on buildings; polished specimens of coloured marbles and varieties of onyx for decorative and constructional purposes, pilasters, dados, &c.; and a carved Adam's vase in Portland stone. The firm, being carvers and modellers as well as architectural sculptors, show modelling in stucco for interior and exterior decoration: ecclesiastical and domestic hardwood, joinery, and fibrous plaster enrichments for ceilings and cornices. Architects will be attracted by the sketch and scale models of details and portions of buildings and church fittings, and the models and patterns for casting in bronze, and other metals. Figures of a shepherd and shepherdess in cast lead recall a once-popular form of garden ornament.

The New Hopton-Wood Stone and Marble Company, Ltd., Middleton-by-Worksworth (whose London representatives are Messrs. John Daymond & Son), show a fountain and moulded kerb in several varieties of Hopton-Wood; a polished chimney-piece with hearth and kerb complete in Hopton-Wood marble, and several large polished sample slabs. The rough block direct from the quarries with various faces polished and dressed, and the scale section of quarry showing the various beds, are both interesting items. There are specimens of balustrading, step, floor, dado, &c., and examples of rough and squared walling, setts, kerb, channeling to show the applicability of the firm's material to different uses.

(To be continued.)

ITWYFORD'S "J" CATALOGUE.

It may be confidently expected that a firm of the prominence of Twyford's, Ltd., will produce a catalogue that in size and quality should be no less ornamental than it is useful. These two merits are obtained in a high degree by their latest general "J" catalogue, which is an extremely handsome volume calculated to be of real service to the architect, the builder, and to all others interested in such matters. In arrangement it is most remarkable for orderliness. The various sanitary appliances are grouped under eight headings, each of which has a projecting tag so as to enable the desired section to be turned up at once. The headings are (1) baths, (2) lavatories, (3) water-

closets, (4) urinals, (5) sinks, (6) bidets, (7) specialties, and (8) accessories. Each of these sections is introduced by short descriptive notes which should help in the difficult matter of making a choice. There is one point made which may here be mentioned for the guidance of customers. Messrs. Twyford's say that to ensure the metal accessories and other component parts of the sanitary goods fitting properly it is advisable to order the fixtures complete, because in this case each combination is carefully assembled at their works, tested, and any necessary adjustments made before dispatch.

Sanitary potters have a rare opportunity in the manufacture of baths, for turning out goods of irresistible attraction. There always seems to be something fascinating about a highly finished bath, and this is felt in merely looking at the catalogue pages. The baths are made at the Hanley works in both fireclay and cast iron. The former material is, of course, the most highly recommended; and many new and finely modelled designs are shown in "Adamant" fireclay for floor, plunge, shower, foot, and sitz baths. But for those to whom first cost is the governing factor there is a wide range of choice in baths of cast iron white enamelled inside and on the roll, but with the outside left plain for painting.

The longest section in the catalogue is that devoted to "C V" earthenware and "Adamant" fireclay lavatories. The introduction of plain roll rims has produced lavatories which are stronger, cleaner, and more attractive in appearance than the older kinds. Several handsome and novel patterns are given of pedestal lavatories, of which there is an increasing demand. For those who prefer metal supports either shaped as wall-brackets or as cast iron stands, the catalogue gives a wide range of choice, as also in the matter of wastes and overflows, taps, and supports. Special attention is drawn to the fine and extensive selection of their lavatory ranges. To meet the technical difficulty in the production, to exact dimensions, of these large pieces of pottery, a large staff of skilled engineers and masons is employed to carefully adjust the parts prior to installation, and so substantial savings are ultimately effected in plumbing and labour charges for fixing.

In the introduction to the water-closet section particular notice is paid to the "Syphonic" and "Valve" patterns. For the latter an earthenware enclosure replaces the old-fashioned insanitary wooden casings; but the cost must preclude its general adoption. Another important department of the firm's business is in the manufacture of urinals, for these are to be seen all over the world. The prices will, in many instances, be found considerably lower than in their previous list.

Space precludes us from entering into the concluding sections of this monumental *catalogue de luxe* of Twyford's, Ltd.

PROPOSED WORKS AT JOHANNESBURG.

H.M. TRADE COMMISSIONER for South Africa (Mr. R. Sothorn Holland) has forwarded to the Board of Trade a copy of a report by the Finance Committee of the Johannesburg Municipal Council, which includes a statement of the estimates not yet voted of expenditure on municipal public works during the five years 1911-15. The total estimates amount to 2,375,285l. The following are among the more important items:—Town Hall buildings, 231,241l.; Art Gallery, 20,000l.; swimming bath, 7,870l.; market at Newtown, 56,460l.; laying out and improvement of parks and estates, 54,715l.; Fordsburg bath and wash houses, 10,000l.; refuse destructor for Eastern suburbs, 16,630l.; intakes and pipe lines, 13,258l.; municipal compounds, 17,000l.; compounds for native housing, 30,000l.; abattoirs, 28,600l.; live stock market extension, 15,000l.; electric power and lighting, 289,680l.; electric tramways, 298,236l.; water supply, 100,000l.; fire stations and plant, 37,000l.; road construction, 120,000l.; bridges and subways, 132,487l.; kerbing and guttering, 166,782l.; sewerage and storm water drainage, 547,000l. Towards this expenditure it is proposed that borrowing powers shall be obtained to a total sum of 500,000l., and that a loan of 250,000l. shall be raised at once.

THE South Westmorland Rural District Council have instructed Mr. Harry W. Taylor (Messrs. Taylor, Wallin & Taylor), of Newcastle-upon-Tyne, to advise them as to the best means of dealing with the sewage of Arnside. The present sanitary arrangements of this seaside resort are not proving satisfactory.

VARIETIES.

PLANS for a mission church at Maltby, to accommodate 500 persons, and to cost about 2,000*l.*, are being considered, and the Maltby Main Colliery Company have given a site.

COMPETITIVE designs are invited up to July 31 from architects within New Zealand for the proposed new Parliament buildings to be erected at Wellington.

A NEW Primitive Methodist church, with seating accommodation for 500, is to be erected at Barrow Hill, Staveley, at a cost of 1,500*l.*

THE Newcastle City Council have deferred for further consideration the proposal to lease 300 acres of the Walker Estate to Co-Partnerships Tenants, Ltd., for development.

THE Pontefract Town Council have decided to provide new baths for the town, including public swimming and children's baths, and slipper and Turkish baths, at a cost not to exceed 4,500*l.*, on the west portion of the Headlands Estate.

THE friends of the late Mr. J. Howard Colls have raised a memorial fund, and with it are about to endow permanently a cot in the surgical ward at the Evelina Hospital for Sick Children, Southwark Bridge Road, an institution of which Mr. Colls was for many years a generous supporter.

ARRANGEMENTS are being made for the deputation from the municipalities of Winnipeg, Montreal, Quebec, Toronto, Edmonton, and other cities in the Dominion of Canada, which visits this country in June and July in connection with the Coronation festivities, to inspect several of the English garden cities and especially the suburbs.

THE Penzance Town Council have come to an agreement with a syndicate in respect of the proposed pavilion. This stipulates that the minimum expenditure shall be 3,500*l.*; the building completed within fifteen months; a lease of seventy-five years should be granted by the Council; the rent to be 45*l.* a year.

A PUBLIC elementary school for about 500 Roman Catholic children is to be provided at Titchfield Street, Liverpool. The Elementary Attendance and Statistical Sub-Committee have had notice of the intention to provide the school, and they have no objection to offer.

A LOCAL GOVERNMENT BOARD inquiry was held last week at Limerick into an application of the Borough Council for a loan of 16,515*l.*, with the object of erecting workmen's dwellings in the city. It was stated that the indebtedness of the Corporation was close on 92,000*l.*, and it was proposed to build seventy-two houses.

THE Cockpen School Board have finally resolved to erect a school in Polton Street, Bonnyrigg, to accommodate 500 scholars at a cost of about 5,200*l.* The plans of Mr. James Gray, architect, Bonnyrigg, have been approved by the Scotch Education Department and the Bonnyrigg Town Council. A tender has been accepted for the work.

THE Southend-on-Sea Corporation municipal undertakings for the past financial year show a profit of 10,000*l.*—6,000*l.* on electricity, 3,000*l.* on the pier, and 1,000*l.* on the trams. This means that the district rate will remain the same as last year's, 3*s.* 4*d.* in the pound, although sewage and other public works are now going on which will involve an outlay of 264,000*l.*

THE annual business meeting of the Architectural Section of the Royal Philosophical Society of Glasgow was held last week at 207 Bath Street, Glasgow. Mr. Robert Miller, F.R.I.B.A., was elected president, and Mr. James Davidson, F.R.I.B.A., and Mr. Wm. Forbes were elected vice-presidents. The hon. treasurer, Mr. J. G. Renwick, and Mr. Stephen Adam, hon. secretary, were re-elected.

A BUSINESS meeting of the Associates of the Edinburgh Architectural Association was held at 117 George Street, Edinburgh, last week, Mr. W. J. Walker Todd in the chair. The report stated that a satisfactory and profitable session had just concluded. Twelve new members had been admitted and four had resigned. Mr. Todd was elected chairman for the ensuing session; Mr. Sydney H. Miller vice-chairman, and Mr. Arthur Prideaux hon. secretary.

THE trustees of the Hospital of St. Cross, Winchester, have accepted the tender of Messrs. Thompson and Sons, of Peterborough, the builders engaged upon Winchester Cathedral, for the re-conversion of the Master's old house in the quadrangle into ten more dwellings for brethren under a scheme approved by the Charity Commissioners. This house was occupied by brethren in pre-Reformation days.

The number of brethren is to be increased to twenty-seven. In ten years the revenues of the hospital have nearly doubled, and next year will be close upon 8,000*l.*

AT the last sitting of the Glasgow Dean of Guild Court the most important amongst the linings granted was one for the new buildings at Yorkhill for the Royal Hospital for Sick Children, the plans for which were approved. Linings were also granted to Edward Watson, fletcher, 170 Argyle Street, to take down existing buildings and erect a tenement of shops, warehouses, and offices in Union Street, Argyle Street, and Mitchell Street; J. G. Carrick & Co., tinsmiths, to make alterations and additions to their works in North Wallace Street; John Lyle & Co., carpet manufacturers, to build additional weaving sheds in Fordneuk Street.

THE Council of the Surveyors' Institution have accepted an invitation from the Lancashire and Cheshire Committee of the Institution to hold the next country meeting at Liverpool on May 25 and 26. Visits have been organised to various works and places of interest in the locality for the afternoon of the 25th, including a trip by steamer to view the River Mersey, the docks and shipping, and a visit to the Cathedral, Queen's Drive and Calderstones Park, Dock Offices, Tobacco Warehouses, and the Grain Silo. The following excursions have been arranged for the following day:—1, Excursion to Port Sunlight and the Cheshire County Council Small Holdings at Ledsham. 2. A visit to Chester, Eaton Hall, and the River Dee.

THE Lancaster parish church vestry have decided upon a scheme, involving the remodelling of the chancel, for which a faculty is to be applied for. The whole of the floor of the church is to be asphalted, to prevent the rising of noxious gases from the bodies buried beneath; the heating apparatus is to be renewed, and the ancient stalls in the sanctuary re-arranged. Forty-two sittings will have to be sacrificed, but the loss will be more than four times covered by bringing the King's Own memorial chapel into use. The total cost is estimated at 3,300*l.*, of which 1,200*l.* has been raised.

AT a meeting of the sub-committee of the Upper District of Renfrewshire in charge of the Eastwood and Mearns water scheme 19 tenders for the work of providing an additional supply of water from the Bannan Loch, in the parish of Eaglesham, were considered, the lowest being that of Messrs. James Kinniburgh & Co., Ltd., 111 Union Street, Glasgow, amounting as checked to 19,209*l.* with sand filters and 18,326*l.* with mechanical filters. The sub-committee unanimously agreed to adopt sand filters, and to recommend the acceptance of the offer of Messrs. Kinniburgh, the work to be completed within 17 months from the date of the acceptance of the tender.

SIR ALFRED EAST, President of the Royal Society of British Artists, a short time ago offered to present to his native town of Kettering a representative collection of his works. In a letter to the Kettering District Council Sir Alfred said he should like to do it for two reasons—for the love he has for the old town, and also as an expression of gratitude for his recent recovery from a very serious illness. He should regard the collection as a memorial, and would see it was worthy both of the Council's acceptance and of his reputation. The Council on Saturday agreed to accept Sir Alfred East's offer, and to properly house the collection.

H.M. MINISTER at Buenos Aires reports that the Argentine Budget for 1911 makes provision for the expenditure of 100,000,000 pesos (about 8,750,000*l.*) on various public works, the chief items being as follows:—Building and furnishing of new Law Courts, 6,000,000 pesos (about 525,000*l.*); construction of new General Post Office, 1,000,000 pesos (about 88,000*l.*); new port at Mar del Plata (see *Board of Trade Journal* of January 5 last, p. 15), 6,818,182 pesos (about 597,000*l.*); construction work on various railways already being built, and beginning of lines (1) from San Juan to Jachal and (2) from Villa Dolores, Cordoba, to San Luis, and rolling stock, &c., 45,454,545 pesos (about 3,977,000*l.*); construction of military barracks, 2,000,000 pesos (about 175,000*l.*); construction of the port of Quequen, 1,818,182 pesos (about 159,000*l.*); extension of water supply and drainage works in Buenos Aires, 9,000,000 pesos (about 788,000*l.*); water supply and sanitary works in several towns in the provinces, 6,000,000 pesos (about 525,000*l.*); construction of immigrants' hotels and homes, &c., 3,000,000 pesos (about 263,000*l.*). H.M. Minister adds that it is impossible to say at present which of the public works authorised by the Budget will be carried out during this year. A copy of the Budget (in Spanish) may be seen by British firms at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, London, E.C.

THE HYGIENIC ASPECTS OF ILLUMINATION AND RECENT PROGRESS IN ILLUMINATING ENGINEERING.*

By LEON GASTER, Editor of "The Illuminating Engineer."

DAYLIGHT and artificial lighting together constitute a very wide subject. Some of us are concerned mainly with the production of light, the manufacture of electric lamps, incandescent mantles, &c.; others, again, are mainly interested in its appropriate use and distribution; but there are certain aspects of the subject which should be of special interest to architects, surveyors, and sanitary engineers, and with some of these I propose to deal.

Almost everyone, whatever his vocation, has to consider the use of light. The school-teacher, the librarian, the shop-keeper, and the business man are all bound to consider with circumspection the lighting of their premises, and the whole nation is intimately concerned with its direct bearing upon health. Sir James Crichton Browne, in an address delivered before the Manchester Sanitary Association in 1902, laid stress on the very close connection between conditions of illumination and general health. He pointed out, what has since received emphatic confirmation, that abundant light is one of the most potent weapons with which to combat the scourge of consumption, and that dark and dismal interiors, where the access of daylight is poor, are invariably breeding places for disease; and he quoted in this connection the Italian proverb, "Where the sun does not enter the doctor comes."

The truth of this proverb is recognised even more fully to-day. The beneficial effects of free access of daylight in preventing consumption, promoting cleanliness, and generally acting as a destroyer of germs, is being insisted upon by those responsible for factories and workshops. The most recently issued report of H.M. Chief Inspector of Factories in this country lays stress on the evils of badly-lighted underground premises. In Holland it has already been recommended that young people must not be employed in any workshops which require artificial lighting between 9 A.M. and 3 P.M. And, in addition, employers everywhere are becoming aware that people work better and more cheerfully, and waste less time in sickness in well-lighted surroundings than they do under conditions which are dim and dismal.

An excellent comment on the widespread appreciation of the need for light is contained in the charming play by Maeterlinck—which some of you here have doubtless seen—"The Blue Bird." In the play, "Light" is constantly referred to as the Friend of Man. It is she who acts as guardian to the children, and who comes to their aid when dangers threaten. Unlike "Bread," "Milk," "Fire," "Water," and the other creatures who only serve under compulsion, she gives willing service. It will be recalled, too, that it is in the Palace of Night, which is free from her beneficent presence, that Fear and Disease and all the other horrors flourish.

We are accustomed to think of light from the standpoint of its use in industry in enabling us to carry on our daily work. But physiologists go further than this. They assert that the ordinary physiological processes of the body, our respiration, the functions of the skin, even our heart-beats, are directly influenced by light. It may well be suggested, therefore, that all the while there are going on processes in which light plays a part—processes of which, possibly, we are unaware, but which, nevertheless, are of the utmost hygienic consequence. We all know, moreover, how susceptible our frame of mind is to climatic conditions; a long spell of rainy or foggy weather invariably leads to depression. People whose occupation precludes them from enjoying their full share of daylight are notoriously apt to take a sad view of things, and the gloomy mental aspect of the night watchman has become proverbial.

There is also one other point on which I may comment here, namely, the effect of good illumination in promoting cleanliness. Naturally, if things cannot be properly seen, it is very difficult to avoid the accumulation of dust and that "matter out of place" which Dr. Johnson has defined as dirt. The sanitary engineer, therefore, who is closely concerned with preventing dirt, is also necessarily interested in preserving good illumination. In this connection I may quote a paragraph from the most recently issued report of H.M. Chief Inspector of Factories (1909):—"The import-

ance of adequate lighting in industrial employment is obvious; as a matter of safety, especially where dangerous processes are carried on; as bearing upon health in many ways, directly and indirectly, and as a condition of efficient work. On the health side it is hardly necessary to point out that inefficient illumination entails risk, strain, and ultimate damage to the sight, even apart from interference with work, or that it tends to neglect of cleanliness and adds to the working in poisonous materials, or that it increases the need for artificial light, which can seldom be as satisfactory as daylight."

In passing I should like to lay special stress on the fact that rooms, utensils, and appliances are not readily kept clean if there is not abundant access of light, and it has been pointed out that in factories badly-lighted machinery is particularly apt to be neglected and allowed to become dirty, thus leading the way to accidents and breakdowns.

In the same way, one may urge that in places where food and drugs are prepared, and much cooking is done, abundant illumination is a necessity; otherwise the utensils will not be properly cleaned, and the food itself may not reach that standard of purity which we expect in well-lighted kitchens or factories.

One specially interesting example of the effect of bad lighting is its effect on personal cleanliness. Here, again, lack of proper illumination may lead to neglect, not only because people become careless about what cannot be readily seen, but also because matters of cleanliness escape their own observation. This is of special importance as regards children, whose health has been shown to be intimately connected with clean conditions.

A very interesting paper on this subject was recently contributed in "The Medical Officer" by Dr. J. R. Currie, Medical Officer of Health in Chester, who presented statistics, gathered in the schools of that city, showing the relation between cleanliness and defects of vision. Good sight and cleanliness, he pointed out, always occur together. Does not this enable us to substantiate doubly our claim for good illumination?

Insufficient illumination is apt to lead to neglect of personal cleanliness; it is also a natural cause of eye-strain on the part of children who do not receive sufficient light to see their task clearly. Probably, therefore, closer attention to the conditions of illumination in schools might lead to an improvement in both respects.

Progress in Artificial Illuminants.

In the time at my disposal I can only briefly indicate a few of the problems which are confronting lighting engineers at the present day, and it is not possible to enter into the engineering aspects of different illuminants in any detail. It may, however, perhaps be of interest to you if I recall some of the chief developments in artificial methods of lighting of the last few years.

Perhaps few of those whose daily work does not bear on lamps and lighting realise how very rapid the recent progress has been.

(To be continued.)

IN the *Carpenters and Joiners' Monthly Journal* for April, Mr. T. W. Wilson, M.P., gives in his notes a table, which shows the value of wooden house frames, fittings, and joiners' work imported into the United Kingdom, and the percentage of unemployed among trade union carpenters and joiners in the United Kingdom in the years 1900-10. The total value of the joinery imported in 1910 was 205,428l., being the lowest (with the exception of the previous twelve months) since 1900, and percentage of carpenters and joiners returned as unemployed was 8.2. In 1900 the respective returns were 1,195,314 l., and 2.2. Mr. Wilson adds the comment: "The figures are official, and, if carefully studied, will supply food for serious thought."

THE Brilliant Sign Co. (1907), Ltd., 38 Gray's Inn Road, W.C., inform us that they have recently installed a press in Antwerp for making brilliant letters and large fascia signs, and have also opened a showroom in Brussels. The business has increased to such an extent in the United Kingdom and elsewhere that they have found it necessary to extend their London factory a further 225 feet, making room for another 100 men. The Company's new catalogue is in the printers' hands at the moment, and will be ready for distribution at the Building Trades Exhibition. This catalogue will have 64 pages, and be quite up-to-date, with innumerable designs of smart signs and fittings suitable for the building trade.

* A paper read before the Institute of Sanitary Engineers on Monday, April 10.

THE BUILDING TRADES EXHIBITION.

IN the absence through illness of Mr. Leonard Stokes, President of the Royal Institute of British Architects, the biennial Building Exhibition at Olympia was this year formally declared open on Saturday by the organiser himself, Mr. H. Greville Montgomery, J.P.

Some 150 well-known architects were present, and made a tour of inspection round the Hall. At the inaugural luncheon which followed Mr. Arthur Keen, F.R.I.B.A., President of the Architectural Association, said:—"I understand this to be an informal gathering, at which speeches are not generally called for, but there is one speech which I feel should be made. In the absence of Mr. Leonard Stokes, I am sure that I express the feeling of all present in thanking Mr. Montgomery for his hospitality to-day and in wishing all success to his Exhibition. That it will be a success goes without saying, for each one of the series has excelled its predecessor; and, as far as one can judge from a hasty inspection, this Exhibition tops the lot. In conclusion, I can only again wish it all success, and express our thanks to Mr. Montgomery." Mr. Ernest George, A.R.A., F.R.I.B.A., seconded the vote of thanks to Mr. Montgomery, and said that it was a great pleasure to him, when President of the Royal Institute of British Architects, to open the Exhibition of 1909. The toast was received with acclamation and spontaneously accorded musical honours. In reply, Mr. Montgomery thanked Mr. Arthur Keen and Mr. Ernest George for the kind things which they had been good enough to say about him and his Exhibition. The proceedings were somewhat out of joint because Mr. Leonard Stokes, President of the Royal Institute of British Architects, who was to have opened the Exhibition, was unfortunately prevented by illness from doing so, but he was sure that all present would join in wishing him a speedy recovery. As the proprietor of the Building Exhibition, he (Mr. Montgomery) was perhaps in a better position than anybody else to gauge the present position and prospects of the building trade. There was, to his mind, a distinct break in the clouds. The sign might be no bigger than a man's hand, but, despite Form IV. and the Dartmoor shepherd, it was clearly to be seen. Doubtless, with him the wish was father to the thought, but he felt confident that his hearers would two years later admit him to have been a wise prophet. Mr. Montgomery concluded by thanking his guests for the very keen interest which they had shown in his Exhibition.

G. R. Speaker & Co., 29 Mincing Lane, E.C., have a wood-framed pavilion, or imitation half-timbered Elizabethan cottage, which has been designed and erected by their own staff to display the possibilities of "Eternit." "Eternit" sheets on a wood frame make the walls, and these are panelled inside with "Eternit" veneered sheets for parquetry, which have a most decorative effect. "Eternit" asbestos cement tiles, 11½ inches by 11½ inches by 9-64 inch, and laid with a 2½-inch lap, form the roof. It is found this slight lap is sufficient for all ordinary purposes owing to the level surface and perfect finish of the tiles. This patent roofing advantageously competes with Ruabon or Broseley tiles, and is only one-seventh their weight, averaging about 21 lbs. per square yard. After three months' exposure the material becomes impervious, indestructible, and as hard as iron. The tiles are sold in grey, blue, and terra-cotta, and may be fixed in three different patterns, as directed in the firm's "Hints for Fixing for Foremen."

It is not sufficiently recognised that this country still possesses a wealth of timber adequate to the needs of constructors, a fact which might well give them cause for consideration when making their selection. Proof in support of this contention is afforded by *Messrs. William Oliver & Sons, Ltd.*, 120 Bunhill Row, E.C., who have boldly brought together a special English lumber section. This firm occupy two stands, near the entrance, displaying various grades of woods. The outstanding feature is that two-thirds consists of English and one-third of foreign woods. Two solid trees, one of brown oak, one of yew, are also shown, as well as two trees cut into boards and sticked ready for open-air drying. The English woods include wainscot oak, hornbeam, walnut, sycamore, oak, elm, &c. These woods can be purchased, *Messrs. Oliver & Sons* assert, equally as cheap and as good as the foreign varieties. It seems regrettable that greater encouragement is not given to British forestry by the more general specification of English timbers.

There are, we believe, three new specialities on the stand of *George M. Callender & Co., Ltd.*, 25 Victoria Street, S.W., viz. "Ledkore," "Veribest," and "Roofelite." The first is a dampcourse composed of a core of laminated sheet lead, covered on each side with a pure natural bitumen containing no coal-

tar or pitch. "Ledkore" is both tough and pliable, and any of its three grades should be entirely impervious and permanent. The roof of the office on the stand is covered with "Veribest" rubber roofing, which is made in one, two, and three ply. This pliable and odourless material can be used without any further coating; it is acid and alkali proof, and is unaffected by gases or vapours. Here it is covered with "Roofelite" waterproof paint, which improves the appearance and adds to the durability of most roofs. It is made in black, red, grey, and green, and one gallon will cover 250 square feet in one coat. "Protex" is a black mineral rubber paint of remarkable adhesiveness, which defies acids, water, and variations of temperature, and is specially valuable as a bond and waterproofing beneath the plaster on a damp wall or between plaster and paper or under floors and floor coverings. Two more familiar exhibits are "Callendrite" pure bitumen sheeting, and "Callendrite" pure bitumen dampcourse. Both these have been in use for a great number of years in many parts of the world. A small reservoir illustrates the original system of waterproofing as invented nearly forty years ago, and the column of loose bricks in the centre shows the efficacy of the dampcourse.

The picturesque bungalow of the *British Uralite Co.* (1908), 85 Gresham Street, E.C., shows the adaptability of the company's manufactures. The walls are of asbestos sheets, 6 feet by 3 feet, nailed direct to a wood framework. The ceilings are Uralite sheets, in one part fixed direct to the joists so as to give a plain flat surface, and in the other fixed above the joists, giving a picturesque half-timbered effect. Asbestos diagonal tiles nailed to battens make the roof, and the verandah is covered with water-proofed Uralite. Both Uralite and Asbestone are supplied in all sizes up to 6 feet by 3 feet, and in thickness from ½ inch to 1 inch; the most usual thickness is ¾ inch. Being fireproof and quickly erected, Uralite is much in favour for bungalows and portable huts, as well as for more permanent structures.

The Yockney and Hartham Park Stone Co., Ltd., show specimens of the various kinds of stone they quarry, together with worked examples. The varieties include Yockney's Corsham Down, Hartham Park, "Ridge Park," "Copenacre Box Ground, Corngrit, and "Pulpit Bed." Each of these has its own special merits. "Ridge Park" (registered), for instance, is one of the strongest freestones obtainable in the Bath district and is especially recommended for trying atmospheric conditions. On the stand an entrance door-way frame has been erected in this material. Copenacre Box-ground is warmly recommended for weatherings and projections in exposed positions. Corngrit is chiefly used for weight carrying purposes and interior work. The firm are a combination of three Wiltshire firms, viz. Yockney & Co., the Corsham Quarrying Co., and Kinneir & Lucas, and their quarries have for over half a century been supplying Bath stone to the building trade.

Ripolin, Ltd., 35 Minories, E.C., have arranged their stand (149, Row G) so as to show sections of four interiors, decorated in various styles with gloss, flat and semi-gloss Ripolin. It is claimed that Ripolin possesses all the covering qualities of the best oil paint as well as the gloss and wearing properties of the best varnish. It is supplied ready for use on indoor and outdoor work in sixty-eight tints. The firm also sell a cement Ripolin for indoors, a floor and furniture Ripolin, and a Ripolin school-board composition, as well as other specialities. The stand fully demonstrates the charming and contrasting effects which are now within the scope of the house decorator.

The already wide-spread popularity of "Well Fires" will receive a new impetus in connection with the "Welft" decorated tiles which *The Well Fire and Foundry Co., Ltd.*, 21 Berners Street, W., use for their surroundings with very delightful effects. Bowes' patents include the "Well Fire" with or without a raised hearth and the "New Pyramid Fire." The firm have always been happy in their chimney-pieces and the general artistic setting to their fires; but they have never before produced anything so pleasing as these "Welft" tiles, which are coloured and baked in London and sold at most reasonable prices. The patterns shown on the stand are altogether delightful, and are drawn from a wide range of styles. Another exhibit is the firm's self-feeding patent anthracite stove which is remarkable for the fact that it has an open fire instead of the customary mica doors. The design is also pleasingly simple without the florid ornamentation usually associated with independent stoves.

Messrs. Colthurst, Symons & Co., Ltd., Bridgwater, show three different interlocking tiles, viz., "interlocking Roman," "interlocking Paragon" and "interlocking Acme." For these no nails are required. They are absolutely weather-

proof, and they cannot strip off even in exposed positions. If the situation is extremely exposed or the roof is of a particularly flat pitch boarding or felting may be introduced with advantage to exclude suction draught. The firm use the fine local clay for the manufacture of every description of roofing tile, also ridges, finials, &c. Of these an assortment will be found on Stand 205, Row J.

It is uncertain when clay goods were first manufactured at Bridgwater, but at any rate it is generally accepted almost as the mother-place of the brick industry. For generations the old town has splendidly held its own. It is well situated both for railway and shipping accommodation, and its manufactures are widely distributed not only in our own islands, but to our Colonies also. The clays found in the district are pre-eminently good for the making of roofing tiles. Messrs. Colthurst, Symons & Co. have kept abreast of the times in supplying coverings suitable for any kind of building. They were the first to invent the "Roman tile" which for many years held the field, and still is in great demand. But other pattern tiles have since been invented and patented by the firm that have special points to resist drift of rain and snow. These are not made in the old truncated fashion, but are perfectly square at the corners, breaking joint, and with their raised barriers minimise, if not effectually check, the possibility of drift. These tiles have been used extensively by the War Office in covering barracks, and architects have specified them for roofing in churches and in fact almost every conceivable kind of building.

The Premier Re-forming Co., Ltd., rubber manufacturers, Walthamstow, E., are prepared to change old rubber into new by a patent process which marks a big advance on anything of the kind that has gone before. It enables them to quote a substantially lower price for supplying articles that are just as good as if made of entirely new material. The uses of rubber are of course very many, and it figures as a not unimportant accessory to buildings. Of the latter we may mention in particular rubber tiling and matting; for these several coloured designs have been prepared by the company. The difference in price of re-formed rubber tiling compared with the other kinds renders this deserving of careful consideration by the architect and builder. There are besides on the stand stair-treads, squeegees, buffers, washers, tubing, and rings, as well as many other objects of importance.

One of the newcomers to Olympia are the United Stone Firms, Ltd., and they make their entry with considerable



éclat. The view we here give of their pavilion cannot, unfortunately, reproduce more than the general design. Excellent as this is, the general effect owes not a little to the harmonious combinations of stones different in colour and texture from the many quarries owned by this important combination. It was felt that visitors would be better able to

analyse the details and better judge for themselves the general and individual effect when seeing the stones under this pleasant guise than by merely inspecting an ordinary sample block. The name of each stone is clearly indicated on the structure. Particular attention should be given to the Mountcharles Stone, the Ham Hill, and the Nailsworth. The two latter are from English quarries, but the first is a Donegal stone which has obtained a great reputation in Ireland, though not much known in the United Kingdom. It is a very fine sandstone of a warm cream colour, which bleaches white after a few years' exposure, and besides weathering well, has a crushing strain of 772 tons to the square foot. It can be worked to any desired finish. A successful example of its use is Letterkenny Cathedral, co. Donegal, which is built, internally and externally, entirely of Mountcharles stone. A pier adjoins the quarries, so that the stone can be loaded direct into the company's own specially-built steamers—of which there are seven—and conveyed to England at the mere cost of water transit. Ham Hill stone has long been familiar to architects. Recently the United Stone Firms took over the leases of the quarries in Somersetshire worked by the Ham Hill and Doulting Stone Co., and they have since considerably developed them. Nailsworth stone has until lately been chiefly used in the neighbourhood of the quarries near the Gloucestershire town of that name. But now that this business has been acquired by the United Stone Firms and modern methods of working introduced it is expected that the merits of the material for internal and external use will win for it a wide market on account of its economy, strength, quality, and durability.

The Willesden Paper and Canvas Works have arranged their stand to show the principal uses of Willesden Underlining and Underslating which are both waterproof and rot-proof. These may be used either over a boarded roof or on the open rafters beneath the slating or tile battens. One side of the stand shows their 4-ply roofing used to cover a verandah instead of tin or sheet-iron. This when painted has a very ornamental appearance. The papers may also be used for damp walls or under floor boards. As a lining for walls the 1-ply 22 inches wide is the paper most generally used. If sized and varnished it makes a very pleasing interior, or it may be covered with paper in the ordinary way. It should not be used against fresh lime, plaster or cement.

Messrs. Machin & Koenig, 62 Aldersgate Street, E.C., show the application of their specialities to the construction and decoration of ceilings, walls, &c. Their name is primarily associated with "Compoboard." This is made of thoroughly seasoned wooden slats, 4 feet long and about 1 inch wide, joined in an endless web, so that the 4-foot length of the slat forms the width of the complete board. It is recommended as a substitute for lath and plaster, than which it is a little cheaper and a great deal quicker. Another feature of the stand is the show of veneered panels in various hard woods, both polished and unpolished. The firm have an "H.P." asbestos slab and an "H.P." asbestos roofing tile.

Most of our readers are no doubt already aware that the "Carbic" light is a novel and safe way of handling acetylene, and that it consists of a specially prepared and treated carbide compressed into cylindrical cakes and rendered impervious to atmospheric moisture. As the carbide is solely susceptible to moisture in liquid form the generation of gas occurs only when water is in actual contact with the cake. This patent is shown by Carbic Ltd. in what used to be known as the annexe. A No. 3 generating plant for twenty or forty 20 candle-power lights of ten and five hours' duration respectively is shown on Stand 179, Row H. The plant is wonderfully compact. The firm are also specialists in the manufacture of portable acetylene flare-lights from 100 to 5000 candle-power; one form is the "Builders' Light," which burns for ten hours for 1s. 6d. These patent flare-lights are the only ones fitted with a burner which can be adjusted at will to give from 500 to 5000 candle-power by simply turning the regulating wheel. Hand-flares and hand-lamps are also shown.

Rd. Johnson, Clapham & Morris, Ltd., Lever Street, Manchester, show examples of monolithic brickwalling with the "H.B." patent reinforcement in the joints. This reinforcement was patented about five years ago, and has met with considerable success. It consists of a band of strong galvanised steel wire netting, 2 inches and 2½ inches wide; the former is inserted into the horizontal joints of a 3-inch brick on edge wall, while the broader is used for a 4½-inch wall. The netting forms a continuous band, imparting very great additional strength. Many large factories and other buildings have hollow 9-inch reinforced brick walls, which

have all the advantage of a 14-inch or 11-inch cavity wall, at one-third less cost. Mr. E. Fisher, architect to the Berkshire Education Authority, in giving evidence before the recent Departmental Committee on Cost of School Buildings, mentioned the case of a one-storeyed school at Blackwell, where the saving by using reinforced brickwork was about 45 per cent. over a school of similar accommodation of ordinary brick construction in two floors. The Committee, in commenting on what they heard from this and other witnesses, reported: "The evidence seems to us to be in favour of the conclusion that hollow walls of reinforced brickwork might prove suitable and satisfactory for school purposes, and under some conditions might also be economical." On the stand there are also specimens of reinforced concrete, including the firm's new "Keedon" system for beams and columns, in which the adjustable stirrup is keyed-on by a metal wedge. Johnson's steel wire lattice system has been already described in these pages, and will be familiar to most of our readers. Full particulars may be obtained concerning it on the stand.

Among the most handsome of the many fine stands at Olympia this year is that of Messrs. Thomas Lawrence & Sons, Bracknell, Berks., in Row G, No. 152. It stands on an island site and in a very favourable position for inspection from a number of view-points. It is a Georgian pavilion specially and charmingly designed so as to exhibit the popular T.L.B. rubbers and their sand-faced facing bricks for the walls, and for the conical roof varieties of T.L.B. tiles. Each elevation varies in design and in the combination of different kinds and colourings of bricks and tiles. The pavilion itself is a lesson in brickwork, in addition to which there are periodical demonstrations of cutting and preparing T.L.B. rubbers ready for use. This demonstrates the ease with which they can be worked, and at the same time shows their fineness of texture, beauty of colouring and general excellence. It may be mentioned that the pavilion, which is built with a view to removal, may be purchased at the close of the exhibition.

J. A. King & Co., 181 Queen Victoria Street, E.C., utilise Stand 111, Row F, to show "Mack" fire, sound and rain-resisting plaster slabs and blocks, serving as partitions, ceilings, pugging, floors, roofs, &c., and as adopted by the Office of Works, War Office, the Admiralty and the London County Council. A new feature is "Ferro-Glass," which briefly may be described as being made up of translucent glass blocks in all sizes and thicknesses assembled and reinforced with mild steel rods and cement mortar, giving in the case of all horizontal constructions a crystal glass ceiling with practically invisible joints, and at the same time a light-carrying construction. The advantages claimed are fire-resisting, great bearing strength, minimum expense for maintenance, maximum light; no shadow cast as in iron-plate construction, no painting necessary, no iron to rust, easily cleaned, rapid construction, artistic effect. "Ferro-Glass" has great possibilities for use as pavement and stallard lights; roof, floor and dome lights; windows and boarded lights; partitions, lantern and lay lights, &c. Another novelty on this stand is a new system of stone preservation and restoration by the pulverisation and reconstruction by chemical amalgamation of stone so as to resemble the natural stone. It has proved a very effective treatment for decayed surfaces.

The "Random" Oakeley slates shown on the curved roof of Stand 165, Row H, by the Oakeley Slate Quarries Co., Ltd., give incontrovertible evidence that a slate covering need not necessarily militate against a high artistic effect. There exists in some quarters a certain prejudice against this material as being entirely unsympathetic; but such a prejudice must be weakening of late before the many buildings which prove that some slates at any rate add instead of detract from the harmony of the whole. Oakeley slates were carried at Blaenau Festiniog a couple of centuries ago, and the sprinkling of North Wales farmhouses retain their original slates still sound and weatherproof. In 1800 the quarrying was undertaken systematically, and since that time the process has been unbroken. During the last twenty-two years less than sixteen million tons of slate rock were quarried and the finished roofing slates dispatched to all parts of the world. An interesting exhibition of splitting and dressing is given on the stand at intervals.

R. Waygood & Co., Ltd., have as usual fitted a full-size electric passenger lift for taking grateful visitors to the gallery. There is also a full-size hand-power passenger lift, as well as models of their passenger lift operated by ropes for a series of floors, and of their hand-power service-lifts operated by endless rope and controlled by brake-rope by a handle and controlled by foot-brake. As lift-makers

by royal warrant to King George V. Messrs. Waygood may certainly be said to have received the hall-mark of merit. An interesting feature of the exhibit is the electric gear of their double passenger lift after it passed through the disastrous fire at the Brussels Exhibition. A novelty is the hydraulic vacuum-cleaner apparatus (System No. 1) for installing in premises where the high-pressure water or even ordinary domestic supply is available. The machine itself is contained in a small box, from which pipes are carried to any part of the building desired. These pipes are fixed quite out of sight, as with gas or water, the only point visible being a small brass cap in each room, to which is fixed a length of flexible hosing when the cleaning is required to be done. The water is turned on and a powerful suction is at once generated, the dust and dirt being carried away to the drain with the waste or exhaust water. The high power is derived wholly from the water-pressure and is controlled simply by turning the water on or off. No mechanical or expert knowledge is necessary.

C. A. Peters, Ltd., again show their timber pavilion treated with "Carbolineum Avenarius," the wood preservative and antiseptic which has been in steady demand for more than a quarter of a century. This non-inflammable preparation really enhances the appearance of timber, for it acts as a nut-brown stain and at the same time throws up the grain. If antioxide is afterwards applied it gives the wood a beautifully polished effect. Carbolineum is applied by means of an iron-bound brush in the way ordinary painting is done, and by its own action penetrates into the wood, drives out the moisture and renders it impervious to damp without stopping up the pores. Besides being useful for wood, the preservative may be applied to walls of stone and brick. Damp walls should be laid open in fine weather, the cracks and joints carefully scraped and cleaned; afterwards filling them up again with mortar, and when dry paint or soak the whole with Carbolineum, giving two or three coats. Walls on the weather side of new buildings treated with two or more coats of hot Carbolineum will thereby be protected against dampness from the outside. The same treatment holds good for foundations. It has been used with advantage as a treatment for wood paving-blocks. Messrs. Peters also show portable stoves which consume their patent Carbotron fuel, as taken out by Captain Scott on his South Pole expedition. They are recommended for motor houses and garages.

George Farmiloe & Sons, Ltd., 34 St. John Street, West Smithfield, E.C., have a distinctly useful exhibit at Stand 101, Row E. As manufacturers of metal casements in wrought-iron, steel and Delta metal, they have selected two types which are obtainable at popular prices and are therefore calculated to find favour with architects who have to carefully prune the items. The well-assorted sanitary fittings here shown are similarly suited to the average purse, though the quality is good enough for high-class property. Both the end-walls of the stand as well as other surfaces are effectively treated with "Zingessol," the perfected washable water paint. It is made in fifty shades, is easy to handle, and has great covering power. Another paint shown is "Filocol," which is a substitute for whitewash. A feature of the stand is the "Oceanic" glass in white and various tints. The stock size of the sheets is 90 inches long by 36 to 40 inches wide and $\frac{1}{8}$ inch thick, and the standard tints always in stock are blue, green, claret and amber. Another feature is a big display of various kinds of plumbers' solder of their well-known "City" brand. Besides the usual 56-lb. casts, the firm now sell 4-lb. ingots, which are in many respects more handy for ordinary use. Other forms of their lead manufactures are also shown. At their Limehouse Mills Messrs. Farmiloe now can turn out lead-sheets 7 feet, 7 feet 6 inches and 8 feet in width.

The Seyssel and Metallic Lava Asphalte Co., 42 Poultry, E.C., who have been established over 35 years, are again showing the specialities to which they devote their attention, comprising "Seyssel" and other natural rock asphaltes for building works, paving, &c., and "Metallic Lava Asphalte" for dampcourses, floors and indoor use. There are models of Seyssel asphalte laid on grooved and tongued boarded roofs, indicating the proper method of treatment of eaves gutters; a section of a valley gutter as usually occurring between north lights, and a similar model for parapet gutters. Samples of the natural rock asphalte before being melted, also of the mastic asphalte, are to be obtained from the stall, and there are samples of their "Tenoped" paving-blocks, suitable for pavings where heavy traffic occurs, also tar-paving, and the ordinary mastic block, properly branded, on view. A list of works successfully completed, together



THE CAPITOL, ROME. From a drawing by Mr. LAURENCE DAVIES.

with the literature upon the matter, and comparison of prices with other materials, can be had upon application.

The Bath Stone Firms, Ltd.—the largest Bath and Portland quarry-owners in the kingdom—have at their Stand No. 12, wall space, a unique representation of their Monks Park, Bath, and Portland stone; also specimens of both monumental and architectural masonry. The Bath stone exhibits are as follows:—Monks Park balustrade; sun-dial pedestal in Box ground; a fine exhibit of coarsed walling in St. Aldhelm Box-ground Bath stone, and rock-face random walling in Portland stone; a four-cluster column in Monks Park Bath stone with moulded carved base and cap; and also a richly-worked example of Monks Park stone with sunk carved panels. Among the Portland specimens are the following:—Part of the balustrade prepared for the New Opera House, Kingsway, with two turned and fluted columns for the same building; a section of moulded and medallion cornice; twin column with base, cap and four-way springer; and sample cubes. One of the most interesting things on view is a sample stone marked by Sir Christopher Wren when selecting stone from the Wakeham district for St. Paul's Cathedral. The stone from these quarries has been employed in some of the finest buildings in London and provinces. Other very interesting features are the original warrants issued in the year 1698 by Sir Christopher Wren and the Committee, bearing Sir Christopher Wren's signature for the quarrying of the Portland stone for St. Paul's Cathedral, also warrants for the raising of stone for H.M. Dock, Portsmouth, and the Royal Hospital, Greenwich.

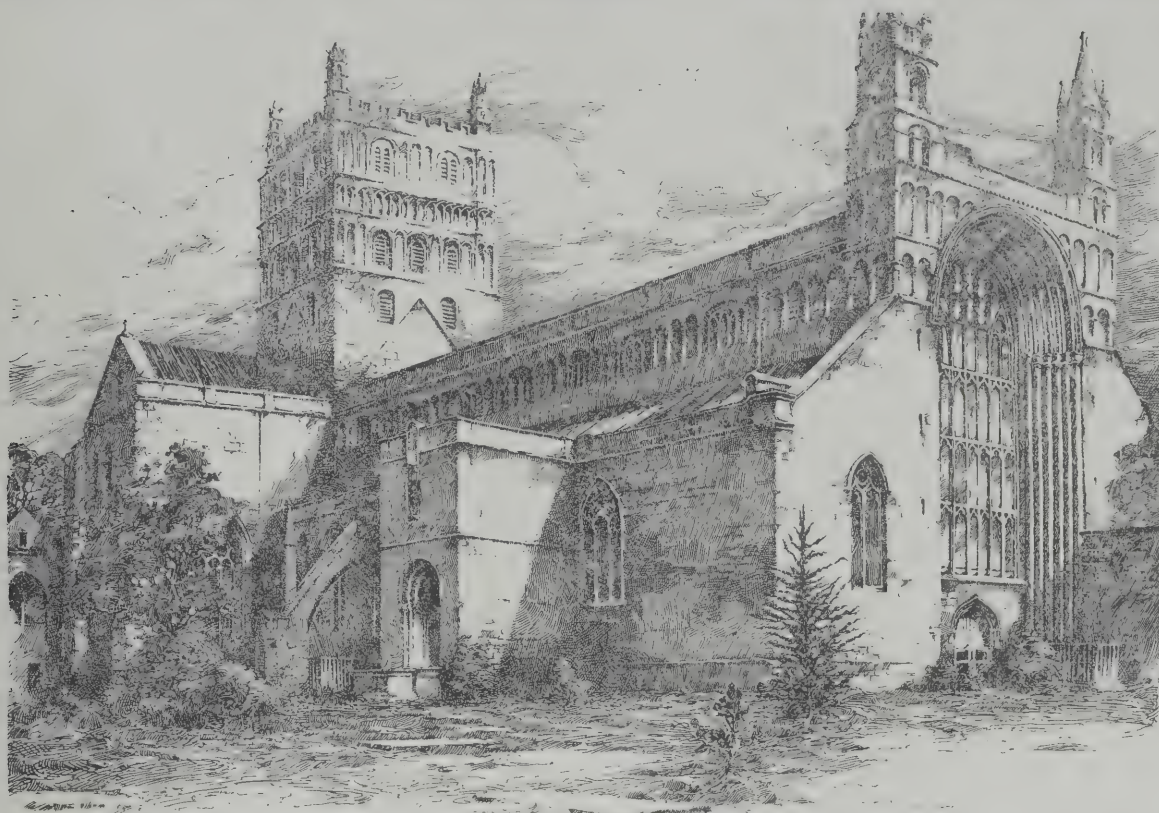
The Nostell Tile and Terra-Cotta Works, near Wakefield, show at Stand 202, Row J, buff, grey and salmon terra-cotta; constructional faience; and tiles of different descriptions. The "Ceramo" tiles have a surface which makes them very effective for fire-places. Another feature which may be noted is the large size of the cornice block in buff terra-cotta. There is considerable technical difficulty in obtaining blocks of such dimensions but this piece will be found to be perfect.

The Empire Stone Co., Ltd., can always be counted on to arrange their exhibit attractively, and this certainly is true

of Stand 21, Row B, in the Gallery, which includes a length of balustrading, vases, walling with Gothic headed windows, steps and other architectural dressings. A prominent feature of their business is the manufacture of paving-slabs, of which a thoroughly matured stock of 100,000 yards is kept at the Narborough works. Somewhat allied to this is the mosaic and terrazzo paving. "Empire Stone" is not a natural product, but it is as durable as granite and is not deteriorated by atmospheric conditions. It can be made to match any existing stonework in detail, colour and finish. In price it compares favourably with Bath stone and it is delivered in about three weeks from receipt of instructions. In addition to its popularity for architectural dressings, the material is largely used for staircases.

The Gluicon Manufacturing Co., of 77 Mortimer Street, W., Stand No. 37A in the Surveyors' Section in the Gallery, are showing parquet floors in various designs. This Company lay all floors with "Gluicon," their speciality (which is a special strong glue and claims to be heat-resisting and waterproof), by experienced British workmen, and their prices compare favourably with other competent firms. They are also showing another speciality, viz., the Mozantum Portable Dancing Floor; the panels are 2 feet 6 inches square, fixed together with iron tongues, and can be quickly laid as a temporary floor for dancing. Splendid examples of oak-carving and ornamental enriched mantelpieces are also on the stand. A patent gas-boiler is worthy of note, and will be explained by the attendant on the stand.

In Row D, Stand 69, there is in operation a patent water-closet, which for its usefulness deserves careful attention. It has been recently put on the market by *The Valveless Syphon Co.*, Kirkstall, Leeds. Bell syphon cisterns are of course already generally known to both architects and sanitary engineers for their efficiency. An advance on the accepted types has been accomplished in the "Waterwitch" patent positive bell syphon cistern. Bell syphon cisterns have hitherto been somewhat unreliable in their flushing owing to the fact that unless the pull is smartly released the bell does not always fall freely, and only a partial flush is



TEWKESBURY ABBEY.—From a drawing by Mr. LAURENCE DAVIES.

effected. This grave defect is remedied in the new closet by removing the direct application of the pull lever to the bell and inserting jointed collapsible connecting links, which are so arranged that when the lever is pulled the bell falls by the full force of gravity and a perfect full bore flush results. The model and the full-size cistern on the stand equally prove the efficiency of the new patent. It should be added that no noise occurs when the cistern is operated so far as concerns the working of the syphon.

The *Emdeca Metal Decoration Co., Ltd.*, can point to an imposing list of castles and stately homes where their material has been introduced. But it has been worthily topped by an order for fixing it in the bathroom of Queen Alexandra at Marlborough House. "Emdeca" is an enamelled decorative treatment of flexible zinc sheets, unrivalled for its artistic and sanitary qualities in such situations as bathrooms, lavatories and kitchens. Its sanitary virtues have secured its use in hospitals and institutions like Guy's, Bart's, Dr. Barnardo's Homes, City of London Asylum, Glasgow Royal Infirmary and the Sanatorium at Wokingham. For proof of its decorative effect we may mention that it is to be found in the Savoy Hotel, Berkeley Hotel, Claridge's, Harrod's Stores and Midland Grand Hotel. The variety of designs obtainable and suitable is practically limitless. Besides "Emdeca," the stand shows "Steleonite" stamped steel ceilings, which lend themselves to a beautiful appearance, and some interesting metal-work, including copper finials and rain-water pipe-heads for the Palace of Peace at The Hague, ornamental rain-water pipes in stamped metal, and a fine model, one-tenth actual size, of the zinc tower supplied for the Reformed Church, Pretoria.

"It's an ill wind that blows nobody any good," so Messrs. *Fenning & Co., Ltd.*, among their specimens of polished granite on Stand 77, Row D, are able, owing to a change of policy by a large manufacturing concern, to offer very large quantities of the famous Labradorite Granite, in sections ready for erection, at prices far below cost, and which will place this durable material with its everlasting polish within the reach of those to whom its cost has hitherto been prohibitive. They show specimens of shaped jambs, cornice and string moulds, and offer suggestions for adapting these, in piers, doorways, stallboards, &c. They show, too, coloured marbles, including some quite new, and of unique colouring. The large slabs of blood-red Skyros, Tinos green, and Greek Cippolino, &c. are effective, while those of Bacchiotto

(special quality) show a beautiful statuary ground with Pavonazzo-like veining of black relieved with green markings. The blocks of this quality are very rare and occur only occasionally in the quarry, of which the whole production is handled by Messrs. Fenning. Another smaller slab of Breche Gobe is richly coloured and eminently suitable for dado and pedestal work. Their samples of Roman mosaic and terrazzo are examples of what can be done in these pavings, while examples of dado and wall work in fine terrazzo give a good idea of how suitable this material is for use in school work, where Messrs. Fenning & Co., Ltd., have fixed many thousands of yards in all parts of the country. The exhibit is completed by sample slabs of "Duroolithic" Composition Jointless Flooring, which is confidently recommended.

Doulton & Co., Ltd., have two distinct stands in separate parts of the building. The one nearest the Addison Road entrance is in Row F, Stand 113. It displays five special bathrooms arranged to meet different purses. There is first the lordly "Vulcan," in which all the fittings are in beautiful white-glazed Vulcan-ware; next comes the luxurious "Doulton," where a great economy is at once effected by the substitution of a cast iron bath for one of Vulcan-ware, and of white Queen's-ware for Vulcan-ware in the lavatory and bidet. Next in price comes the "Gold Knot" (so called from its decoration); then the "Model," and finally the "Villa," which illustrates how the firm are ready to cater for the cottage as well as the palace. At Stand No. 137, Row G, is the exhibit of stoneware pipes and their aristocratic relations the fireplaces, and full size examples of Carrara. Of particular interest to architects will be the fine archway in Carrara and a most imposing capital in the same ceramic material which is finding such favour for hotels, shop premises, and public buildings in large towns. The fireplaces in salt-glazed stoneware are as delightful as ever, and as this ware can be used in conjunction with any kind of fire it must meet with approval from all.

Considerable space is required by Messrs. *Phillips & Son*, Sherborne Street, Birmingham, and Caxton House, Westminster, for the display of fire and burglar-proof strong rooms, strong room doors, party wall iron doors, and safes. One of their new specialities is the introduction of Naxian steel, which is formed by uniting plates of mild steel with plates of hard or high carbon steel into one homogeneous plate impregnable to the finest drilling machine and hardest files. When used in small plates to protect the lock only—

as on all Messrs. Phillips' "Channel Bolt" and best quality safes—these Naxian steel plates are rivetted to the door by means of special manganese steel rivets. Safes so equipped are put forward as undrillable and impregnable. The patent "Channel Bolt" has acquired a high reputation. It consists of a special rolled steel channel, forming a continuous bolt, entirely encircling the door. This channel is drawn inwards by turning the handle of door into a similar channel built into the frame of safe. The advantages are: The bolts not shooting outwards cannot be driven in by any tool to admit of access to the safe; it is a continuous bolt right round, and not a series of small bolts; there are no bolt holes in the frame; the fire-proof chamber comes right up to the front of safe. The channel, being all round, assists in keeping air, fire, or water from the interior. Conspicuous on the stand is an exceptionally heavy safe weighing three tons which has been made for extraordinary risks, such as diamond storage. All the parts are armour-plated and undrillable.

An instructive and useful exhibit to all users of Portland cement is at Stand 118, Row F (main gangway), by the *Associated Portland Cement Manufacturers (1900), Ltd.* A complete insight is afforded into the manufacture, testing, and possibilities of this material. There are samples of cement clinkers and cement at various stages; aggregates of various descriptions both suitable and unsuitable for mixing; briquettes for testing, a complete testing apparatus, and an hydraulic crushing machine. Practical tests are carried out from time to time with the latter. The stand is decorated with photographs of notable undertakings in various parts of the world in which the company's brands of cement have been employed. It is over a century since Mr. J. Bazley White founded the first English firm of cement manufacturers, and it is ten years ago since John Bazley White & Bros., Ltd., was transferred with twenty-one other concerns to the Associated Portland Cement Manufacturers, Ltd.

The *Clee Hill Granite Co., Ltd.*, Ludlow, Salop, show in Bay 16a (Gallery) the channelling and paving setts, macadam, rough and broken stone, and chippings for concrete, drives, footpaths, &c., as supplied to a very large number of authorities in England and Wales. The opinions of three county surveyors on the product of the quarries is worth quoting here. The Consulting County Surveyor of Gloucestershire says: "I have tried your stone against six of the hardest and best known road stones, and in every case the Clee Hill stone has proved the best." According to the County Surveyor of Worcestershire "there is certainly not a better stone to be found in any part of England. The broken stone for roads is excellent, and the setts are amongst the best kinds, being very durable, well dressed, and non-slippery." Lastly, the County Surveyor of Middlesex says: "The macadam obtained from the Clee Hill basalt forms a most perfect road metalling." No better testimonial can be required than is supplied by these three experts in road construction.

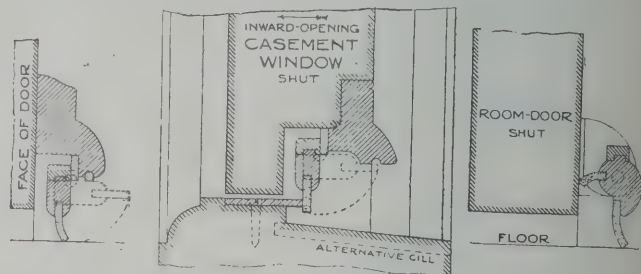
The *Wilson Rolling Shutter Co.*, St. John's House, 124-7, Minories, E., have erected on Stand 220, Row K, one of their rolling steel shutters and one of their doors, as well as two types of patent collapsible gates. Wilson's interlocking slat rolling doors and shutters are made of open-hearth cold-rolled steel. The interlocking slats are designed to secure the maximum of lateral strength and resistance to wind pressure, and they are constructed in such a way as to avoid all sharp bends, thereby adding greatly to the durability. The door shutters are furnished with endless chain gearing mechanism whereby large doors are easily operated, or the smaller doors can be made self-coiling if preferred. The firm have carried out a number of contracts to the order of the London County Council; and a recent important job was for the supply of double metal rolling doors across one hundred openings in Messrs. Whiteley's new premises.

One of the newcomers to Olympia is the *British Ceresit Waterproofing Co., Ltd.*, Caxton House, Westminster, S.W., who are showing their preparations at Bay 23 in the Gallery. "Ceresit" belongs to the class of waterproofing materials which are added to the water with which the cement, mortar, or concrete is mixed. It is sold as a cream white paste, and immediately dissolves in the water with which it is mixed, in the proportion of about one part of "Ceresit" to twelve of water. This renders cement, brick and concrete work absolutely watertight even under a pressure of over 70 lbs. per square inch. The material has been used all over the world for such exacting purposes as water towers, swimming baths, dams and tunnels, and in structures ranging from the Kaiser's castle at Posen to the premises of the Siam Elec-

tricity Co. at Bangkok. By a number of effective and easily understood tests carried out on the stand, an excellent idea is given of the waterproofing value of "Ceresit."

One of the notable stands of the exhibition is that of *Messrs. Carter & Co., Ltd.*, Row G, No. 157, although it is not one of those made conspicuous by originality of arrangement. Its merit lies in the merits of the objects displayed. The firm's encaustic tile-works in Poole, Dorset, have steadily expanded ever since they were opened by Mr. Jesse Carter in 1873. For the past thirty-eight years the scope of their manufactures has been enlarging until it now covers a wide field. The lines exemplified on the stand include tiling for walls and floors; ceramic, marble and glass mosaics; constructional faience and terra-cotta; faience fireplaces; "Ceramic Marble"; "Ceramiston" and garden pottery. The stand is spanned by a fine archway carried out in "Ceramic Marble," which is one of the firm's principal departures in the way of architectural material. In its soft colour, fine texture, and dull glazed surface the archway is most attractive and offers a welcome addition to the possibilities of street-front architecture in towns. There is an unusual specimen of ceramic floor decoration with antique effect, and also of a ceramic mosaic pavement in soft colours.

The "Durabar" Draught and Dust Excluder and Weather Bar may be seen on Stand 93, Row E (*Messrs. Hy. Hope & Sons*). This useful device, the patent of Mr. A. R. Groome, A.R.I.B.A., for stopping the draught-space found under every door and window, has recently been installed in Windsor Castle for his Majesty the King, having previously proved very successful at Marlborough House. The latter in-



stallation was the outcome of the visit of the present King and Queen to the Building Exhibition at Olympia two years ago, when Mr. Groome had the honour of explaining the "Durabar" to their Majesties. The "Durabar" is also fitted to the front-door of the model cottage and a number of other exhibitors' doors throughout the Exhibition. It can now be had in various styles, and at popular prices (from 3s. 11d. upwards). New illustrated price-list may be had of The Durabar Co., Palace Chambers, Hereford, who are the sole makers.

The *Coatostone Decoration Co.*, of 77 Mortimer Street, W., who are exhibiting Neal's patents, have their usual attractive Stand No. 37 in the Gallery. "Coatostone" (liquid stone) is shown in various tints for interior and exterior decoration; this material can be lined out with a bricklayer's jointer, which gives a slight indentation, and with a painted line giving it the appearance of stonework with a mason's joint. Examples of their interior and exterior rough-cast are also shown. "Nealstone," resembling ashlar work and imitating Portland stone with moulded cornices and fluted pilasters with carved caps and moulded bases, is exhibited. The brickwork is first rendered with cement and sand and finished with "Nealstone" from $\frac{1}{8}$ inch to $\frac{1}{4}$ inch in thickness; it is made in various tints to resemble any kind of stone and texture, and can be carved to suit architects' own designs. "Nealstone" is claimed to be thoroughly waterproof and much harder than stone, the texture being difficult to detect from the natural stone, and it is worth noting by architects as a great saving where their clients require to economise and still get the same effect as a stone building. Several stands in the Exhibition have been decorated with the specialities supplied by the Coatostone Decoration Co. Mr. A. W. Neal, their inventor, has been recently awarded the Grand Prix, Diploma of Honour, and the gold medal for "Coatostone" decorations shown at the International Exhibition held in Paris, March 1911.

Garratt's patent screw-down tap was introduced, we believe, to the trade exactly two years ago at Olympia. It is again shown by *Garratt's Patent Screwdown Valve Co.*, and may be seen in action on Stand 121, Row F. Since 1909 its progress has been phenomenal. They are already in use by H.M. Office of Works, in the Sutton Trust Model Dwellings, and in many hotels, public buildings, and cottages

THE

Architect and Contract Reporter.

FRIDAY, APRIL 28, 1911.

Published weekly, subscription 19s. per annum for Great Britain, and for Colonial and Foreign subscriptions £1 6s. 6d. All business communications to the Managing Director,

P. A. GILBERT WOOD,

Publishing Offices, 6-11 Imperial Buildings, Ludgate Circus, London, England.

Telephone No. 4725 Holborn.

Branch Offices at 43 OLD QUEEN STREET, S.W., Messrs. W. HAY FIELDING & CO. being the representatives for all business purposes.

The Birmingham Offices are at 102 COLMOORE ROW.

Entered in the United States of America as second-class matter.

AGENTS FOR AMERICA:

The International News Co., 5 Bream's Buildings, Chancery Lane, London, England; and New York.

AGENTS FOR CANADA:

Messrs. WM. DAWSON & SONS, Ltd., 91 Church Street, Toronto, to whom all correspondence for Subscription and Advertising Rates should be made.

Subscription \$5.20.

AGENTS FOR AUSTRALIA, NEW ZEALAND AND TASMANIA:

Messrs. GORDON & GOTCH, Melbourne, Sydney, Brisbane, and Perth, Australia; Wellington, Christchurch, and Auckland, New Zealand; Launceston and Hobart, Tasmania.

SOUTH AFRICA: Central News Agency, Ltd.

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Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

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EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit the insertion of lengthy communications.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

. As great disappointment is frequently expressed at the nonappearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

ATHENS.—Sept. 25.—An international competition of plans is invited by the Greek Ministry of the Interior (Public Works) for the erection of a Court of Justice at Athens. The cost of the building must not exceed 160,000*l*. A first prize of 800*l*., and a second prize of 320*l*. will be awarded. The Greek *Official Gazette*, containing particulars (in Greek and in French) may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

BRADFORD.—June 1.—The Board of Management of the Bradford Infirmary invite plans with estimates for a new infirmary in Duckworth Lane. Mr. Keith D. Young, F.R.I.B.A., will act as assessor. Deposit 3*l*. 3*s*., which will be refunded on receipt of a *bona-fide* design or if block plan, instructions, &c., are returned within a month after receipt of replies to competitors' questions. The Secretary Superintendent of the Royal Infirmary, Bradford. (For further particulars see advertisement, January 13.)

BULGARIA.—April 30.—An international competition will be held of plans for a building which it is proposed to erect in Sofia for State and municipal offices. The following four prizes will be given, viz., 280*l*., 120*l*., 80*l*., and 4*l*. Applications must be sent to the "Kreis-Permanenz-Ausschuss," Sofia.

BURSTOW.—May 26.—The Trustees of Archbishop Abbott's School, Guildford, invite designs and estimates for erection of a pair of semi-detached labourers' cottages on the Rookery Farm, Burstow, Surrey, to contain a living room, a scullery, and three bed-rooms, and to be provided with a water supply and the usual offices and outbuildings. Mr. H. P. Smallpeice, clerk, 138 High Street, Guildford.

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CHESTERFIELD.—May 15.—The Standing Joint Committee for Derbyshire invite architects practising in the county to submit designs for a Court-house and lock-up to cost 8,000l. Mr. F. Baggallay, F.R.I.B.A., will act as assessor. Deposit 3l. 3s. Apply to Mr. G. C. Copstick, L.R.I.B.A., County Offices, Derby.

DEVIZES.—May 10.—The Committee of the Devizes Cottage Hospital invite competitive designs for providing a new six-bed ward at, and making a general re-arrangement of, their existing hospital (16 beds) at a maximum cost of from 1,200l. to 1,500l. Deposit 10s. 6d. Conditions of competition and particulars of the buildings required will be supplied to intending competitors by Mr. E. Thorp, honorary secretary, Devizes.

MANCHESTER.—May 1.—The Corporation invite designs for a Library and Art Gallery upon the Piccadilly site in the centre of the city. The Preliminary Competition closes May 1. The authors of ten selected designs will compete in the Final Competition. Mr. Reginald Blomfield, A.R.A., will act as assessor, in connection with the city architect. Apply for particulars to Mr. Thomas Hudson, Town Clerk, Town Hall, Manchester.

WALES.—May 5.—The Corporation of Swansea invite architects to submit designs and estimates for the Castle Street improvement. Deposit 1l. 1s., which will be refunded on receipt of a bona-fide design or if block plan and particulars are returned within a fortnight after receipt. The architect appointed to prepare the working drawings will be paid not more than 250l., and a premium of 50l. will be paid for the second design. Mr. S. S. Reay, F.R.I.B.A., will act as assessor. Apply to the Town Clerk, Guildhall, Swansea.

WHITLEY BAY.—June 7.—The Whitley and Monk-seaton Urban District Council invite architects practising in Northumberland and the city of Newcastle-upon-Tyne to submit designs for the proposed cemetery buildings. A professional assessor has been nominated by the President of the R.I.B.A. to assist in drawing up the conditions and to advise on the relative merits of the various designs. The site-plan and the conditions can be obtained on a written application being made, accompanied by a deposit of 1l. 1s., which will be returned to every competitor submitting a bona-fide design. The designs, addressed to the Surveyor, are to be delivered at the Council Offices, Whitley Bay, on or before June 7. Apply to Mr. Augustus Whitehorn, Clerk to the Council, 60 Sayille Street, North Shields.

CONTRACTS OPEN.

ALTON (HANTS).—May 3.—For alterations and additions to the Eggars Grammar School. Deposit 2l. 2s. Mr. M. G. Pechell, architect, 7 John Street, Bedford Row, W.C., or Mr. A. F. M. Downe, clerk to the Governors, 46 High Street, Alton, Hants.

BARKING.—May 10.—For the works comprised in the extension of the Electricity Works, East Street. Deposit 2l. 2s. Mr. C. F. Dawson, surveyor, Public Offices, Barking, Essex.

BLAYDON-ON-TYNE.—May 2.—For erection of station buildings, platform roofing, &c., for the North-Eastern Railway Co. Mr. William Bell, the Company's architect, Central Station, Newcastle-on-Tyne.

BRADFORD.—May 2.—For work required in rebuilding Queen Hotel, Listerhills Road. The City architect, Town Hall, Bradford.

BUSHEY.—May 3.—For (a) erection of a caretaker's cottage and (b) construction of a circular sedimentation tank, 30 feet diameter by 20 deep, with certain alterations to existing sedimentation tanks, for the Bushey Urban District Council. Deposit 2l. 2s. Mr. E. E. Ryder, engineer and surveyor, Council Offices, Bushey, Herts.

CAMBRIDGE.—May 2.—For erection of a shelter at the pig pens at the cattle market, for the Town Council. Borough Engineer and Surveyor, Guildhall, Cambridge.

CHADSMOOR.—May 9.—For erection of a church in Can-nock Road, adjoining the Council Schools, for the Trustees of the Primitive Methodist Church, Chadsmoor, Staffs. Apply before May 2 to Messrs. Jeffries & Shipley, architects, 24 Bridge Street, Walsall.

CLEATOR.—For the different artificers' work in connection with a new residence at Cleator, Cumberland. Send names to Mr. E. Martindale, architect, 11 Lowther Street, Whitehaven.

COSBY.—May 5.—For erection of a new elementary school and handicraft centre at Cosby, Leics., together with out-offices, drainage, and other works connected therewith. Deposit 10l. 10s. The County Education Office, 33 Bowling-green Street, Leicester.

CROSSHILLS.—May 2.—For the mason's, ironfounder's, plumber's, plasterer's and slater's works required in re-building joinery works at Crosshills, Yorks., for Messrs. W. Smith & Co. Mr. J. Hartley, architect, Skipton.

DERBY.—May 1.—For erection of knackers' slaughter-house at the refuse destructor. Mr. J. Ward, M.I.C.E., borough surveyor, Babington Lane, Derby.

DROYLSDEN.—May 17.—For erection of an elementary school for 810 children in Fairfield Road, Droylsden, Lancashire. Deposit 2l. Mr. H. Littler, county architect, 16 Ribblesdale Place, Preston.

EDMUNDBUYERS.—May 4.—For the several works required in erection and completion of villa at Edmundbuyers, Durham. Mr. T. H. Murray, Consett.

ELTHAM.—May 3.—For the erection of Eltham new Post Office, Kent, for the Commissioners of H.M. Works and Public Buildings. Deposit 1l. 1s. The Postmistress, Eltham, and H.M. Office of Works, Storey's Gate, London, S.W.

FALKIRK.—May 3.—For the mason, joiner, slater, plumber, and plaster works of new block to be erected at Camelon Hospital, Falkirk, for the Eastern District Committee of the County Council of Stirling. Messrs. A. & W. Black, architects, Falkirk.

GLASGOW.—May 4.—For the following works required in connection with the villas proposed to be erected at the corner of Dumbreck Road and Dalkeith Avenue, Dumbreck, viz., mason, brick, carpenter, joiner, slater, plumber, &c., plaster, and painter works. Deposit 1l. 1s. The Office of Public Works, City Chambers, 64 Cochrane Street, Glasgow.

GOOLE.—May 10.—For additions and alterations to the workhouse hospital and other buildings. Messrs. Thorp & Turner, architects, Carlisle Street, Goole.

HALIFAX.—May 1.—For the execution of the work required in erection of conveniences at Rockhollow Park, Ogden. Deposit 1l. Mr. J. Lord, M.I.C.E., borough engineer, Town Hall, Halifax.

HALIFAX.—May 5.—For the various works required in the conversion of lodge into detached villa, &c., at King Cross, Halifax. Messrs. Medley Hall & Son, architects, 1 Harrison Road, Halifax.

HEATHFIELD.—May 1.—For erection of a classroom and other work at the County Council public elementary school at Vine Cross, Heathfield. Send names and addresses to Mr. F. J. Wood, county surveyor, County Hall, Lewes.

HORWICH.—May 10.—For erection of an infants' school to accommodate 400 children, at Horwich, near Bolton. Deposit 2l. Mr. H. Littler, county architect, 16 Ribblesdale Place, Preston.

JERSEY.—May 31.—For the construction of a parish hall in the parish of St. John. Mr. C. G. Bowles, M.S.A., architect, Halkett Place, St. John.

KENT.—May 3.—For the erection of Eltham new Post Office, for the Commissioners of H.M. Works and Public Buildings. Deposit 1l. 1s. The Postmistress, Eltham, and H.M. Office of Works Storey's Gate, London, S.W.

KING'S LYNN.—May 17.—For proposed additions to the West Norfolk and King's Lynn High School for Girls. Send names and 2l. 2s. deposit by April 29 to Mr. H. J. Green, architect, Paradise Parade, King's Lynn.

LONDON.—May 2.—For additions and alterations at the receiving Workhouse and Casual Wards, Sheffield Street, Lincoln's Inn Fields, W.C., for the Guardians of the Strand Union. Deposit 3l. 3s. Mr. A. A. Kekwick, M.S.A., architect, 12 Norfolk Street, Strand.

LONDON.—May 4.—For the erection of a committee-room at the Workhouse, Swaffield Road, Wandsworth, S.W. Deposit 1l. Mr. F. W. Piper, clerk, Guardians' Office, St. John's Hill, Wandsworth, S.W.

LONDON, N.—May 10.—For certain building work at the Nurses' Home, Edmonton Workhouse, Upper Edmonton, in the erection of an escape stairs and alterations to an existing staircase, for the Guardians of Edmonton Union. Mr. J. C. S. Mummery, architect, 13 Fitzroy Square, W.

MAIDSTONE.—May 15.—For the erection of County offices and making certain alterations to the Sessions House adjoining, for the Kent County Council. Deposit 5l. 5s. The County Architect, 86 Week Street, Maidstone.

MARYPORT.—May 1.—For the whole or any of the several trades required in the erection and completion of new picture

palace in Senhouse Street, for Messrs. Graves Bros. Send names to Messrs. Oliver & Dodgshun, F.F.R.I.B.A., architects, Carlisle.

MEDOMSLEY EDGE (DURHAM).—May 4.—For the several works required in erection and completion of two houses at Medomsley Edge. Mr. T. H. Murray, architect and surveyor, Consett.

MILNSBRIDGE (YORKS.).—May 2.—For the various works required in additions and alterations to showrooms at Milnsbridge, for the Longwood Gas Co. Messrs. Lunn & Kaye, architects and surveyors, Milnsbridge and Huddersfield.

MORLEY.—May 8.—For the whole or any portion of the following works: Mason, joiner, plumber, plasterer, slater, tiler, and painter, required in erection of villa residence in Victoria Road. Mr. T. A. Buttery, Lic. R.I.B.A., architect, Queen Street, Morley, and 1 Basinghall Square, Leeds.

NEWBURN-ON-TYNE.—For the erection of an electric theatre at Newburn. Send names to Mr. T. R. Eltringham, architect, Throckley, Newburn-on-Tyne.

NUNEATON.—May 3.—For alterations to cottage adjoining the Council offices. Mr. F. C. Cook, borough surveyor.

PUDSEY.—May 30.—For the whole or any part of the works required in erection of three pairs of semi-detached houses on the Radcliffe Estate. Messrs. Jowett Kendall & Sons, architects, Pudsey, Yorks.

RHYMNEY (MON.).—May 3.—For repairing, papering, and painting, &c., the following hotels for Messrs. A. Buchan & Co., The Brewery, Rhymney, viz.:—(1) Old Mill Hotel, Bargoed; (2) Royal Hotel, Rhymney; (3) Railway Inn, Pontlottyn. Mr. T. Roderick, architect, Ashbrook House, Aberdare.

SALTASH.—May 4.—For building a farmhouse and farm buildings at Stoketon, near Saltash, Cornwall. Mr. J. Sansom, F.R.I.B.A., Liskeard, and at Stoketon.

SCOTLAND.—May 1.—For the brick, joiner, slater, plumber, plaster, heating and painter works of new building proposed to be erected at Winchburgh Public School, for the Kirkliston School Board. Mr. W. M. Scott, architect, Linlithgow.

SCOTLAND.—May 11.—For the several works required in altering, enlarging, and fitting-up two bathrooms and lavatories, &c., and erecting a new boiler-house, for the Annan Combination Infectious Diseases Hospital. Mr. D. A. Knox, clerk, Annan.

SEAFORD.—May 1.—For erection of a refuse destructor house and chimney at the Sewage Pumping Station, Brooklyn Road, together with the inclusion in the contract of the supply and erection by Messrs. Meldrum Bros., Ltd., of a two-cell refuse destructor and boiler, and works incidental thereto. Messrs. Pollard & Tingle, engineers, 31 Old Queen Street, Westminster, or Mr. W. H. Pawson, clerk, 3 Clinton Place, Seaford.

SELBY.—May 3.—For the various works in erection and completion of a post office and shop. Messrs. Thorp & Turner, architects and surveyors, Goole.

SHEFFIELD.—May 11.—For the work required in connection with alterations, &c., to the sanitary conveniences at the Children's Homes Headquarters, Smilter Lane. Mr. G. D. Baxter, clerk of works, Fir Vale Workhouse, Sheffield.

SILLOTH.—May 6.—For builders', slaters', plasterer, plumbing, painters' and ironwork of five houses proposed to be built at Silloth. Mr. J. R. Thompson, 13 Esk Street, Silloth, Cumberland.

SLOUGH.—May 2.—For erection of a bakery at the rear of the central premises, High Street, for the Slough and District Co-operative Society, Ltd. The Society's Office, High Street. Mr. W. T. Whalley, managing secretary.

SOUTHAMPTON.—May 8.—For erection of a new outpatient department, for the Committee of the Royal South Hants and Southampton Hospital, Southampton. Deposit 2l. 2s. Applications must be made by letter by May 8 addressed to Mr. T. A. Fisher Hall, secretary.

STAINCROSS.—May 1.—For the various trades in the building of a parsonage house at Staincross, Barnsley. Send names and addresses to Messrs. R. & W. Dixon, architects, 5 Eastgate, Barnsley.

STOCKTON-ON-TEES.—May 2.—For small alterations and additions at the workhouse for the accommodation of vagrants. Mr. J. Rodham, 16 Finkle Street, Stockton-on-Tees.

STOKETON.—May 4.—For building a farmhouse and farm buildings at Stoketon, near Saltash. Mr. J. Sansom, F.R.I.B.A., Liskeard.

STRATTON ST. MARGARET.—May 9.—For ventilation, &c., of old and young men's day rooms at the workhouse, Stratton St. Margaret, Wilts. Mr. J. P. Kirby, clerk, Union Offices, Swindon.

TOLLESHUNT D'ARCY.—May 2.—For erection of six cottages in the parish of Tolleshunt D'Arcy, Essex, for the Maldon Rural District Council. Mr. W. Almond, surveyor, Market Hill, Maldon.

WALES.—May 1.—For erection of 16 houses at Brecon Road, Merthyr Tydfil, for the Brecon Road Building Club. Mr. O. P. Bevan, architect and surveyor, "Express" Chambers, Merthyr Tydfil.

WALES.—May 1.—For erection of from 16 to 28 semi-detached villas at Ebbw Vale, Mon., for the Badminton Grove Building Club. Mr. W. Harris, architect and surveyor, Bank Chambers, Bargoed.

WALES.—May 2.—For erection of a Great Western Railway station at Llancaiach, Glam. The office of the engineer, Newport Station, Newport.

WALES.—May 2.—For the erection of a goods shed, stable, offices, &c., at Cremlin (Mon.). The office of the engineer, Newport Station, Newport.

WALES.—May 2.—For erection of new institute premises, close to Victoria station, Ebbw Vale, for the Committee of the Waunlywd and Victoria Institute. Deposit 2l. 2s. Mr. F. J. Veall, architect, 6 Arcade Chambers, High Street, Cardiff.

WALES.—May 5.—For the erection of a school at Craigygreos (Penygraig), to accommodate 400 boys, 400 girls, and 400 infant scholars, for the Rhondda Urban District Council. Send 2l. 2s. to the accountant. Mr. J. Rees, architect, Hillside Cottage, Pentre.

WALES.—May 5.—For erection of a lodge at Treallaw Cemetery, for the Rhondda Urban District Council. Deposit 1l. 1s. Mr. W. J. Jones, engineer and surveyor, Council Offices, Pentre.

WALES.—May 6.—For erection of stables at Quarry Row, Merthyr Tydfil. Mr. O. P. Bevan, architect and surveyor, Express Chambers, Merthyr Tydfil.

WALES.—May 6.—For erection of 29 or more workmen's dwellings at the Old Gantre, Ebbw Vale, Mon., for the Beaufort Building Club. Mr. W. Harris, architect and surveyor, Bank Chambers, Bargoed.

WALES.—May 8.—For alterations and renovation of the Caersalem Congregational Chapel, Pontyberem. Mr. W. B. Rees, architect, 3 Dumfries Place, Cardiff.

WALES.—May 9.—For erection of 48 or more houses near Nantybwch for the Ashgrove Building Club, Tredegar. Mr. W. Harris, architect and surveyor, Bank Chambers, Bargoed.

WALES.—May 10.—For the rebuilding of the Pandy Inn, Tonypandy, for Messrs. The Rhondda Valley Breweries Co., Ltd. Deposit 2l. 2s. Mr. R. S. Griffiths, M.S.A., architect and surveyor, Tonypandy.

WALES.—May 16.—For erection of the Monmouthshire County Training College, principal's residence and lodge at Caerleon, near Newport, Mon. Deposit 3l. 3s. Messrs. Alfred Swash & Son, F.R.I.B.A., Midland Bank Chambers, Newport.

WALES.—May 18.—For erection of a drill hall at Towyn for the Merionethshire Territorial Force Association. Deposit 1l. 1s. Mr. R. W. Davies, M.S.A., architect and surveyor, Carno, Mont.

WALSALL.—May 3.—For erection of bathroom, &c., to the Forrester Ward, also other alterations to the premises of the Walsall and District Hospital. Deposit 1l. 1s. Messrs. Bailey & McConnal, F.F.R.I.B.A., architects, Kingscourt, Bridge Street, Walsall.

WENFORD BRIDGE.—May 15.—For building a further china clay kiln and tanks at their works, Wenford Bridge, on the L. and S.W. Railway, for the North Cornwall China Clay Co. (1908), Ltd. Deposit 2l. Mr. W. H. Patchell, M.I.C.E., Caxton House, Westminster, S.W.

WEST BROMWICH.—May 12.—For the erection of new classrooms and cloak room at Lyng School, and for manual instruction rooms at Spon Lane School. Deposit 1l. 1s. each. Mr. A. Long, architect, West Bromwich.

WIMBLEDON.—May 6.—For the following works, for the Corporation of Wimbledon, viz.:—(1) Conversion of entire block into a four-bed observation block; (2) erection of a boiler house and chimney shaft; and (3) construction of boiler seatings, and the supply and fixing of two Cornish boilers at the Isolation Hospital, Gap Road, Wimbledon. For contracts 1 and 2 deposit 10s. The Borough Engineer and Surveyor, Town Hall, Wimbledon.

TENDERS.**CROMPTON.**

For construction of sewerage works, for the Crompton Urban District Council. Messrs. J. P. WILKINSON & SON, M.M.I.C.E., 301 to 304, Cathedral Street, Manchester, engineers.

Morley & Sons	£13,256	6	8
Turner	10,160	11	4
Brebner & Co.	9,371	12	7
Cowburn & Sons	8,888	11	4
Hayes & Sons	8,348	14	9
Edmonson & Wyatt	8,098	0	0
Price & Co.	7,871	9	5
Graham	7,767	14	3
Boswell	7,592	8	0
Hyslop & Co.	7,550	17	2
FREEMAN & SONS, Hollinwood (accepted)	7,487	0	0
Johnson & Son	7,292	0	0

EASTLEIGH.

For building a drill hall, Factory Road, Eastleigh, Hants, for the Territorial Force Association. Mr. R. H. P. BEVIS, architect, Southsea.

Mackintosh Bros.	£2,137	0	0
E. & A. Sprigings	1,936	0	0
Franklin & Co.	1,800	0	0
Croad	1,800	0	0
Light & Son	1,797	0	0
Jenkins & Sons	1,768	0	0
Fitt	1,731	0	0
Salter	1,697	0	0
Wort & Way	1,692	10	0
Crosby & Co.	1,684	0	0
Stevens & Co.	1,658	0	0
Paddington & Co.	1,597	0	0
Douglas	1,581	0	0
A. J. COLBORNE (accepted).	1,548	18	0

EXETER.

For additions and alterations to the Chapel at St. Luke's College, Heavitree Road. Mr. J. JERMAN, F.R.I.B.A., architect, Exeter.

Oak Roof.

Herbert	£1,256	9	0
Soper	1,234	10	0
Stephens & Son	1,198	0	0
Stile & Son	1,156	0	0
Coles	1,153	0	0
Mudge	1,150	0	0
Ham & Passmore	1,120	0	0
Bunclark	1,120	0	0
Brealy	1,113	0	0
Hooper	1,044	0	0
Setter & Son	1,025	1	9

Memel Roof.

Herbert	£1,152	6	0
Coles	1,108	0	0
Stephens & Son	1,085	0	0
Stile & Son	1,081	0	0
Mudge	1,040	0	0
Ham & Passmore	1,026	0	0
Bunclark	1,024	0	0
Brealy	993	0	0
Hooper	942	0	0
SETTER & SON, Exeter (accepted)	917	6	0

GLOUCESTER.

For the erection of a house in Gloucester. Mr. FRANK W. FOSTER, architect, 26 Bedford Row, W.C.

Peer	£2,489	0	0
Byard & Sons	2,420	0	0
Estcourt & Sons	2,203	0	0
NICHOLLS (accepted)	2,195	0	0

MAIDSTONE.

For rebuilding the premises of Messrs. Denniss, Paine & Co., 24-26 High Street, Maidstone.

Ansett & Son	£7,047	18	1
Davison	6,552	0	0
Elmore & Son	6,317	10	0
Burrows	6,279	0	0
Barden & Head	6,250	0	0
Cox Bros.	6,194	0	0
Corben & Co.	6,172	0	0
G. E. WALLIS & SONS, Maidstone (accepted)	5,994	0	0

IRELAND.

For supply and erection of generating plant and wiring at St. Patrick's College and at the Bishop's House, Cavan. Mr. A. E. PORTE, consulting engineer, Dublin.

Lund Bros.	£1,225	0	0
Brunker	1,179	13	6
Patterson	1,175	0	0
Johnson & Phillips	1,156	0	0
Meldon & Co.	1,151	0	0
Gilmore & Co.	1,126	10	0
Dowling & Sons	1,073	0	0
Estate Engineering Co.	1,056	0	0
Carr & Co.	1,004	7	6
Coates & Sons	998	0	0
Telford, Grier & Mackay	983	17	2
Edmundson's Electricity Corporation, Ltd.	977	0	0
Scott Engines Co.	962	12	4
Crabtree	951	10	0
Cash & Co.	936	0	0
MECREDY, EATON & Co., Dublin (accepted)	884	0	0

LONDON.

For laying a sewer in Jersey Road and Thornbury Road, Hounslow, for the Heston and Isleworth Urban District Council.

Watson	£850	0	0
Pedrette	765	15	0
Lane & Co.	749	11	0
Farrow	700	9	3
Gibbons	696	8	10
Mowlem & Co.	694	0	0
Free & Sons	670	15	10
Clements, Knowling & Co., Ltd.	637	0	0
Elliner	624	18	10
Swaker	614	13	0
Downer	598	0	0
Chapman	582	17	2
THACKER & Co., Westminster (recommended)	524	11	0

Surveyor's estimate, £650.

For rebuilding Nos. 2, 3 and 4 Giltspur Street and 34 West Smithfield, E.C. Mr. FREDK. W. FOSTER, architect, 26 Bedford Row, W.C.

G. H. & A. Bywaters	£11,589	0	0
Barrett & Power	11,536	0	0
Holland & Hannen	11,444	0	0
Downs	11,222	0	0
Carmichael	11,158	0	0
Gray	11,067	0	0
Minter	10,975	0	0
FOXLEY & Co. (accepted)	10,894	0	0

For repairs and remaking of roads at St. John's Road Workhouse, Islington, for Islington Guardians. Mr. E. J. HARRISON, architect, 9 Gray's Inn Square, W.C.

Boyer	£1,612	15	0
Killingback & Co.	1,089	0	0
Andersen	1,057	0	0
Mowlem & Co., Ltd.	1,018	0	0
International Asphalt Co.	1,003	13	0
Patersen	999	0	0
Porter	977	6	7
Trueman, Ltd.	977	0	0
Griffiths & Co., Ltd.	975	0	0
Adams	963	10	0
Catley	946	0	0
WHEELER & Co., LTD., 235 Blackfriars Road, S.E. (accepted)	894	15	0

For the erection of a drill hall, riding school, and administrative building for the 4th London (Howitzer) Brigade R.F.A., at Ennersdale Road, Hither Green, S.E., for the Territorial Force Association of the County of London. Mr. GEORGE A. LANSDOWN, F.R.I.B.A., architect, 9 Regent Street, S.W.

Kent	£10,128	0	0
Mowlem & Co.	9,235	0	0
H. & E. Lea	8,993	0	0
Parker & Sons	8,823	0	0
Johnson & Co.	8,729	0	0
Downs	8,573	0	0
F. & H. F. Higgs	8,531	0	0
Marsland & Sons	8,478	0	0
Godson & Sons	8,457	0	0
Patman & Fotheringham	8,423	0	0
Price	8,387	0	0
TREASURE & SONS (accepted)	8,300	0	0

LONDON—continued.

For the pulling down and rebuilding of the Westminster Arms public-house, Warner Place, Bethnal Green, N.E.
Mr. GEORGE A. LANSDOWN, F.R.I.B.A., architect, 9 Regent Street, S.W.

Parker & Sons	£2,397	0	0
Rice & Sons	2,269	0	0
Marsland & Sons	2,235	0	0
Johnson & Co.	2,200	0	0
Kirk & Kirk	2,121	0	0
Smith & Sons	1,995	0	0
Strutt & Co.	1,985	0	0
H. & E. Lea	1,955	0	0
SNEWIN BROS. & Co. (accepted)	1,890	0	0

MERTON.

For laying about 5,000 yards super, of soft wood-paving, including concrete foundations and incidental works, in High Street, Merton, S.W., for the Merton Urban District Council. Mr. G. JERRAM, A.M.I.C.E., surveyor.

Carruthers & Co.	3,334	19	4
Acme Flooring & Paving Co.	2,833	13	11
E. & E. Iles	2,918	0	0
Griffiths & Co.	2,512	16	6
Mowlem & Co.	2,459	5	6
IMPROVED WOOD PAVEMENT CO., LTD., 46 Queen Victoria Street, E.C. (accepted)	£2,455	14	5

PLYMOUTH.

For additions to workhouse laundry. Messrs. THORNELY, ROOKE & BARRONS, architects, Plymouth.

Trevan	£1,269	0	0
Debnam	1,242	0	0
Carwithen	1,208	0	0
Wakeham Bros.	1,147	0	0
Tozer & Son	1,114	0	0
Turpin	1,086	0	0
Roberts	1,058	4	0
Pearn Bros.	1,054	0	0
PAYNTER, Plymouth (accepted)	1,007	0	0

SOUTHMOLTON.

For building a drill hall, with officers' quarters, in reinforced concrete, at Southmolton, Devon, for the Territorial Force Association. Mr. SPENCER EDWARDS, P.A.S.I., architect, Barnstaple.

Stewart	2,454	0	0
Sanders & Son	2,327	0	0
Somerville & Co.	2,265	0	0
Yorkshire Hennebique Contracting Co.	2,246	17	0
Pickett	2,200	0	0
Cater & Son	2,095	0	0
Soper	2,060	15	3
Woodman & Son	2,033	0	0
Pollard	2,030	0	0
WOOLAWAY BROS., Barnstaple (accepted conditionally)	£1,990	0	0

TAPLOW.

For the rebuilding of St. Nicholas' Church. Mr. Geo. H. FELLOWES PRYNNE, F.R.I.B.A., architect, 6 Queen Anne's Gate, Westminster, S.W. Quantities prepared by Mr. R. Henry HALE, F.S.I., of 6 Queen Anne's Gate, Westminster, S.W.

Longley & Co.	£8,179	0	0
Goddard & Sons	7,795	0	0
Cooper & Sons	7,719	0	0
Bowman & Sons	7,695	0	0
Fryer & Co.	7,444	2	4
Wilkins & Sons	7,407	0	0
Dickens & Co.	7,338	0	0
Dorey	7,088	0	0
Cox & Sons	7,074	0	0
Webster & Cannon	6,968	0	0
Walden & Cox	6,935	4	0
Franklin	6,927	0	0
HONOUR & SONS, Tring (conditionally accepted)	6,681	0	0

WESTON-SUPER-MARE.

For the erection of St. Paul's Church, Weston-super-Mare. Mr. PETER G. FRY, architect, Weston-super-Mare.

Fear	£9,954	0	0
Taylor	9,941	0	0
Stradling	9,335	0	0
Trask & Sons	9,287	0	0
Addicott	9,165	0	0
Moggridge	9,143	0	0
Smith	8,994	0	0
Pittard	8,788	0	0
Stephens, Bastow & Co.	8,758	0	0
Fursland	8,699	0	0
Merrick	8,397	0	0
H. W. Pollard	8,282	0	0
Wilkins & Sons	8,245	0	0
Walters & Sons	8,187	0	0
G. Pollard	8,111	0	0
Spiller	8,100	0	0
HAYES & SON, Bristol (accepted)	7,659	0	0

WALES.

For erection of a church at Gorseinon. Mr. W. D. JENKINS, architect and surveyor, Llandilo.

Lloyd Bros.	£9,150	0	0
Smith	8,918	0	0
Hatch & Sons	8,900	0	0
Davies & Sons	8,845	0	0
Bridgeman & Sons	8,738	0	0
Stephens, Bastow & Co.	8,689	0	0
Howells & Son	8,500	0	0
Wilkins & Sons	8,228	0	0
Colborne	7,898	10	0
Turford & Southward	7,893	0	0
Mercer	7,849	0	0
Revised tenders, substituting local stone for brick.			
Mercer	£7,685	0	0
WILKINS & SONS, Bristol (accepted)	7,500	0	0
Colborne	7,398	10	0
Turford & Southward	7,340	0	0

For erection of a church at Ammanford, exclusive of tower. Mr. W. D. JENKINS, architect and surveyor, Llandilo.

Davies	£7,340	0	0
Evans	6,800	0	0
Jones Bros.	6,250	0	0
Mercer	6,248	0	0
Deakin & Greenwood	6,158	0	0
Hayward & Wooster	6,153	0	0
Bridgeman & Sons	6,104	0	0
Bloxham	6,097	0	0
Howells & Son	5,998	0	0
Davies & Sons	5,939	0	0
Stephens, Bastow & Co.	5,870	0	0
Smith	5,671	0	0
A. J. COLBORNE, Swindon (accepted)	5,349	0	0

WIMBLEDON.

For the erection of the Nelson Hospital. Messrs. FRANCIS HATCH & R. A. HINDS, F.R.I.B.A., architects, Wimbledon Hill.

Rogers	£8,540	0	0
Foster & Dicksee	7,521	0	0
Willet	7,461	0	0
Renshaw	7,430	0	0
Carmichael	7,412	0	0
Holloway Bros.	7,397	0	0
Minter & Co.	7,330	0	0
Whitehead Bros.	7,290	0	0
Parsons	7,170	0	0
Parsons & Townsend	7,160	0	0
BURGESS & SONS, Wimbledon (accepted)	7,040	0	0
Blake	6,990	0	0
G. & J. Fairhead	6,913	0	0
Dovey & Co.	6,765	0	0

BRISTOL.

For erection of proposed bottling stores, Bristol, for Messrs. Whitbread & Co., Ltd. Mr. ARTHUR DIXON, architect, London.

Nicholson & Sons	£4,418	0	0
Perkins & Sons	4,390	0	0
Stephens, Bastow & Co.	4,358	0	0
Hayes & Sons	4,299	0	0
Cowlin & Son	4,200	0	0
F. CHOWN, Bristol (accepted)	4,110	0	0

where it is realised that the best tap proves in the end cheapest. The essential economy arises from the fact that they do not get out of order and drip, or need re-washing, so that their first is their last cost, though they outlive two ordinary taps. The reason of this longevity is that the rubber or other seating never turns nor twists, for it gets the direct pressure of the piston, whereas in the average screw-down tap the spindle turns and the friction on the jumper drags it with a shearing effect on the washer every time the tap is used. The screw-thread remains unaffected by hard or even gritty water, as it works out of contact with it.

The *Acme Flooring and Paving Co. (1904), Ltd.*, Victoria Park, N.E., have again a large and attractive stand. It is up in the Gallery and occupies Bays 24 and 25. A good display is made of sample blocks and polished panels in various woods, of W. Duffy's "Immovable Acme" system of oiled wood block flooring, which is guaranteed for five years. Stress may be laid on the fact that the blocks are not imported, but are made at the firm's own works with the utmost attention to accuracy of cutting and quality of the blocks. The blocks are bonded into a homogeneous floor by wooden dowels. This system has been adopted with unflinching success for many years past. Samples of their paving-blocks and timbers, including the "Acme-Sectional" hardwood paving, are also exhibited. The "Acme-Sectional" blocks are made up of six separate pieces securely bonded together by two tongues driven in by machinery. They have great wearing powers and have achieved much popularity among road-construction authorities.

Martin Earle & Co., Ltd., 139 Queen Victoria Street, E.C., show in Bay 20 in the Gallery both their "Rhinoceros" and "Ferroduric" brands of Portland cement, as well as specimens of their various types of barrels, which are all made on the works at Wickham, Rochester. The "Rhinoceros" brand carries with it a guarantee of compliance with all modern specifications, including the British Standard Specification, as revised to August of last year. In recent tests for tensile strain, for instance, briquettes of neat cement averaged 522 lb. and 695 lb. per square inch, after seven and twenty-eight days from gauging respectively, as against the requirements of the British Standard Specification of 400 lb. and 500 lb. The expansion test by the Le Chatelier method on the sixteen samples dealt with above was only four millimetres as against the ten millimetres which are allowable. "Ferroduric" is a brand manufactured to meet the huge demand for a cement specially suited for ferro-concrete construction, and has been used on many important contracts.

Mr. John Tann, 11 Newgate Street, E.C., shows at Stand 37, Row E, a good assortment of safes and doors. Pride of place may be given to those "Anchor Reliance" improved safes, which are made out of one steel plate, bent by hydraulic power at each of the twelve corners so as to render them solid and jointless. This renders the body of very great strength and capable of withstanding thieves and fire. Mr. Tann also shows his Party Wall and Warehouse Doors, made to meet the requirements of the L.C.C. and of the Fire Office Committee, plate closet doors where a moderate amount of security is required, and strong-room doors.

It is pleasing to find such a domesticated exhibit as that of the "J. M." *Curtain Rod Co.*, Leicester (Stand 162, Row H), for it makes an instantaneous appeal to minds somewhat jaded by wonders of construction. The "J. M." curtain Rod consists of bendable metal rod with a raised and grooved ridge in the centre on which the runners travel. The rod is bent to the desired shape and screwed into the window head. The curtain is then hooked to the runners, which travel on wheels. A similar idea, sold at a very much lower price, is the company's "Flexoid" curtain rod. In both the curtains are drawn easily, they hang gracefully, and admirably fit the shape of the window. This patent will at once remove the trouble of rods falling out of their supports and the unsightly cornice poles.

A comprehensive display is that of *Messrs. Newton, Chambers, & Co., Ltd.*, Thorncliffe Ironworks, near Sheffield, Stand 180, Row H. These include a "Thorncliffe" patent open and open-fire cooking range; a hot closet with two serving dishes with covers; a potato and pudding steamer, with welded compartments, a steam-jacketed boiling pan, and a fountain. There are several patterns of radiators, including one for use in hospital wards; the six nickel-plated sections are widely-spaced so as to allow of thorough cleaning between each. A "Thorncliffe" cast-iron sectional boiler is on the stand. For this it is claimed that it gets an exceptional calorific value out of the fuel, being as high as 9000 T.U. in the case of coke. The soot doors are made exceptionally strong.

Richard Crittall & Co., Ltd., 197 Wardour Street, W., provide at Stand 37, Row C, one of the interesting features of this exhibition in the patent "Panels" system of heating by low-pressure hot-water. With the hot panels utilising the full effects of radiant heat a much lower temperature of warming surface can be maintained than in the ordinary radiation which heats by convection. Consequently the quality of the air is not impaired by undue drying, and the temperature of the room may stand as low as 55 degrees while the general feeling is one of comfort. Each panel consists of a coil of jointless wrought-iron pipe embedded in the floors and walls in a layer of special composition unaffected by the heat of the pipes and of which the rate of expansion is extremely low. This composition is, we may mention, made by the Durato Company. It sets to a hard surface which can be painted, and on which mouldings can be mounted if desired. The specially-constructed pipes are coupled to the main warming system, and each section valved to enable the temperature to be controlled. There are no ledges or crevices for the lodgment of dust, all outward signs are removed, and the black marks on walls and ceilings that occur where ordinary radiators are used, are obviated. The installations of the "Panel" system include the Royal Automobile Club, Pall Mall; Savoy Hotel, Adelphi Hotel, London; Hanover Lodge, Regent's Park, N.W.; and the new offices for Royal Liver Friendly Society, Liverpool.

The *Carron Co.* have prepared special Interiors and Mantel Registers and Mantel Pieces suitable for garden city property; these are both artistic and cheap. A good show is made of their Armour Bright goods which are made at the Sheffield works, and some of these eighteenth century grates are particularly fine. The stand (No. 223, Row K) includes enamelled porcelain baths, steaming closets, and a range.

"Painting done while you wait" might truthfully be hung over Stand 56, Row D, where *Messrs. Archibald Vickers, Ltd.*, Prestons Road, E., carry out continual demonstrations of what their paints are capable of doing. The boldness of this method cannot fail to appeal to all who are anxious to judge of the efficacy of a paint under conditions which they themselves are likely to require it for. It is really instructive to watch a paint's covering capacity and surface when applied direct with and without undercoatings, first in one coat and then in two on to a piece of raw wood. These are searching tests which none but the best material can survive. The firm have taken as their watchword "Vickers' paints protect and decorate," and the truthfulness of this will be admitted without demur. Their paints, varnishes, and enamels are all manufactured in this country, are economical, regular in quality, and easily applied. The finishing coats are manufactured in three distinct grades—viz., oil finish, Japan finish, and enamel finish. Anyone who feels that "seeing is believing" should pay a long visit to this stand.

Messrs. Norton & Gregory, Ltd., Buckingham Gate, S.W., again occupy Bay 1 in the Gallery, and their stand is one to win favour with all architects, engineers, and surveyors. One of the new things exhibited is an improved pattern-drawing table. The "Adjustable" can be fixed at any height and angle so as to allow of the draughtsman sitting or standing at his work. This pattern is improved by the simplifying of the working parts. Thus all levers are done away with, the movements being regulated by thumb-screws. It is complete with shelf, drawer, and patent T-square. Another convenient appliance is the "Arcas" sun-painting frame. The counter cases contain a choice selection of the drawing instruments and surveying instruments which have made the name of Norton & Gregory familiar throughout the world. Anyone who has not yet tried the "Verrine" eraser should ask for particulars. It has the unique property of erasing ink lines from tracing cloth without damaging the surface of the material in any way.

If publicity is the soul of business the Stand 57, Row D, of *The Brilliant Sign Co., Ltd.*, Gray's Inn Road, W.C., is one of the important ones at Olympia, for that firm are past-masters in the art. Their freehold factory (now being enlarged) covers nearly three acres, and they employ five hundred men for carrying out the largest as well as the smallest orders. The firm were the original manufacturers and patentees of the Brilliant Metal Letters which have since become so popular; these they are prepared to sell at prices 10 per cent. lower than the imitation, and with a guarantee for fifteen years. The letters are stamped in stout sheet copper from steel discs and finally gilt under a secret process. On the stand there are a number of aids to publicity, whether they be ingenious trade signs, gilt-wood letters, plate-glass, shop front metal work, or repoussé signs.

Walter C. Candy, Hall Green, Birmingham, shows glazed stoneware drain-pipes as supplied to the War Office, sand-faced "Wallace" roofing which weather well, glazed bricks, sanitary ware, and facing bricks. Assorted truck-loads of builders' goods are made up and dispatched to any part of the country. The Stand is Row G, No. 140.

Lewis Berger & Sons, Ltd., Homerton, N.E., show "Enamelac," "Matone," and "Artercraft Stains." On the stand is a door painted seven years with "Enamelac," the pure white enamel, and which still shows a splendid surface, after being constantly exposed and annually exhibited ever since though without being re-touched. This paint is made in three varieties—egg-shell gloss, flat, and high gloss. "Matone" is a high-class durable flat enamel in paste form which does not require stippling, but can be applied with a full-sized distemper brush. It may be freely washed with soap and water without endangering its finish. Five wall spaces show "Matone" in different shades. The outside walls of the exhibit are finished in different shades of "Maisone" washable distemper, and a number of doors show other paints.

Messrs. Fenlon & Son, 8 Tudor Street, E.C., have at Stand 19, Row 9, a good display of geysers, baths, radiators, and allied apparatus required in their business as heating specialists, geyser, bath, and boiler-makers. The "Tudor" geyser has two sealed chambers; patent locking gear-taps or automatic eccentric valve, which prevents accidents; and a flue socket. The "Fleet" geyser has been put on the market to meet the demand for something both cheap and efficient, and is constructed on the open system. Shrewsbury's "Calda" geyser has been in use for more than forty years for places where hot water is required with expedition. The self-contained "Unique" radiators are complete in themselves, having a special circulating boiler with flow and return pipes. It is said to be the only self-contained radiator with a patent safety-valve. Messrs. Fenlon & Son show other radiators, boilers, and hot-water apparatus.

The British Stone & Marbles Co., Craven House, Kingsway, W.C., have two claims on the visitors' attention at Stand 148, Row 8. First, there is Reconstructed Stone, and secondly, a new and notable system of glazing called "Ferro-stone" glazing. It will be remembered that Reconstructed Stone is the product of a patent process by which the debris of any suitable building stone is first reduced by mechanical disintegration to a granular state, and then built up again by a series of mechanical and chemical operations, into a material indistinguishable from the quarried product, and superior to it in some respects. This Reconstructed Stone is used for "Ferro-stone" glazing. By the introduction of steel-tension members a glazing is produced which is stronger, though by little, than the old metal bars, imperishable, fire-resisting, and so dense and compact as to be acid proof. While comparing favourably with metal bar glazing in first cost, "Ferro-stone" glazing requires no painting, lead covering, or other treatment, so that the cost of maintenance is reduced to a minimum. The glass is easily fixed. It is secured to its seatings by lead clips which are drawn up tight by brass screws that screw into the stone. This new system is deserving of careful attention from architects, contractors, and others interested.

Towers' "Adamantine Clinker," Fire and Roofing Tile Co., Little Bytham, Grantham, show "Adamantine Clinkers" (of which they are the original makers); paving bricks and channels; fire-bricks and fire-tiles; and roofing tiles. The clinkers have for a large number of years been unsurpassed as a solid sanitary paving suitable for stables, fire stations, kennels, cattle markets, &c. Amongst the list of places where the material has been used are the Royal Mews at Windsor and Sandringham. It is interesting to learn that these clinkers are finding a growing market in the United States. The tiles are made in buff, red, and grey.

The Bath Cabinet Makers' Co., Ltd., have taken full advantage of a prominent position in Row E, No. 100, to display their architectural wood-carving to advantage. This artistic stand represents an oak-panelled hall or dining-room in the Jacobean style. The outside is carried out in "None-such" panelling, which is sold and fixed in the metropolitan area at 1s. 6d. per square foot. The stand on the inside is panelled up to about 8 ft., and has a plaster frieze above. It is covered in by a half-timber ceiling.

The Smart Improvement Co., 46 Broadway, West Ealing, show at Stand 27, Row C, the "Aero Window Sash Adjuster," which is designed to allow of the top sliding-sash of a window being raised or lowered without any of the usual stretching, or other trouble. The sash is not altered in any way, all that is done is to add a series of pulleys. An addi-

tional cord is attached to the top sash and carried through the window frame pocket down to the sill and through a guide-block into the room. The sash is opened by lightly pulling the cords; it is raised by merely raising the cords to a horizontal position, the camb grip releases the cord and the window shuts automatically. The apparatus can be easily fixed to existing sashes by adding make-weights made for the purpose.

THE CONCRETE INSTITUTE.

By the courtesy of Mr. H. Greville Montgomery, the members of the Concrete Institute have been invited to visit the International Building Trades Exhibition at Olympia, West Kensington, W., on Monday afternoon, May 1. The members of the Institute will assemble in the vestibule of the Addison Road entrance at 3.15 for 3.30 p.m. sharp, at which time groups of the members will be conducted round the Exhibition, special attention being accorded to the numerous concrete exhibits which will be on view. At 5 o'clock the members will re-assemble at the Restaurant, where Mr. Montgomery has invited the party to tea.

At 5.45 p.m. it has been arranged to hold, in a hall in the Exhibition, the first of the course of six Educational Lectures on the subject of Reinforced Concrete, by Mr. R. W. Vawdrey, B.A., Assoc. M.Inst. C.E., M.C.I., which have been arranged under the auspices of the Institute, and to which the public will be admitted free by ticket, obtainable on application to the Secretary. The other five Lectures will be delivered on consecutive Wednesdays, May 3, 10, 17, 24, and 31, in the Lecture Hall of the Concrete Institute, at Denison House, 296 Vauxhall Bridge Road, Westminster S.W. The following is a syllabus of the course: General description of the material; its advantages and limitations; principles of the design of columns, piles, beams, cantilevers, slabs, and arches; the determination of the external forces acting on a reinforced concrete structure; effect of a monolithic structure; general arrangements of a building; different types of design for footings, columns, rafts, floors, retaining walls, water towers, reservoirs, bridges, bins, and domes; workmanship and supervision.

The second annual general meeting of the Concrete Institute will be held at Denison House, on Thursday, May 11, at 8 p.m., Sir Henry Tanner, I.S.O., F.R.I.B.A., presiding, for the following purposes: (1) To receive and consider the annual report of the Council, the annual statement of accounts and balance sheet, and the report of the auditor thereon; (2) to receive the report of the scrutineers on the annual election of members of Council; (3) to appoint (on the nomination of the Council) Mr. H. Denton Hardwicke as auditor.

It has been decided to hold a two days' summer meeting on Wednesday and Thursday, June 7 and 8, in connection with which there will be the first annual dinner. Further particulars of this will appear shortly.

MR. EDWARD LEONARD, Inspector of the Local Government Board, held an inquiry at Westminster Guildhall last week into an application by the Middlesex County Council for consent to borrow sums amounting to 85,128l. for the erection of a new Guildhall on the present site at Westminster.

The Chartered Surveyors' Golfing Society will hold a one day tournament at Northwood on the Northwood club's course on Tuesday, May 9. The fixture includes a bogey competition, stroke competition and foursome competition. Prizes will be presented by the captain, Mr. C. R. Lowe, and the Society. All members of the Surveyors' Institution are eligible to join the Society. The Honorary Secretary is Mr. Sidney A. Smith, 22 Chancery Lane, W.C.

UNDER the auspices of the National Housing and Town Planning Council and other organisations, a conference for Lancashire, Cheshire, and the North-western Counties, will be held at Manchester on May 13, to consider the powers and duties of local authorities under the Housing and Town Planning Act, 1909. It is hoped, as a result of the conference, to form district committees to work on non-party lines "for the wise and active administration of the Act." The following points will be considered in detail: 1, Closing of houses unfit for human habitation; 2, improvement of houses which are not in all respects reasonably fit for human habitation; 3, right of complaint to the Local Government Board of inaction on the part of the local authority; 4, housing of the poorest poor and provision of lodging-houses; 5, building of new cottages and development of garden suburbs; 6, town planning.

THE HYGIENIC ASPECTS OF ILLUMINATION AND RECENT PROGRESS IN ILLUMINATING ENGINEERING.

(Continued from last week.)

IN electric lighting the chief advance has been in the direction of metallic filament glow-lamps. In the year 1905 lamps of this kind were known, but were regarded as little more than experimental curiosities. Subsequently, when I exhibited a 200-volt lamp of this kind at the Institution of Electrical Engineers early in 1906, there were still many who doubted whether it would be possible to make such lamps for higher voltages than 100. Yet, as you know, such lamps are in common use to-day, and the difficulties of making durable lamps of small intensity have been largely got over. We have now lamps consuming only 1.1–1.2 watts per c.p., which will burn, under favourable conditions, for over 1,000 hours without sensible diminution of light, can be used in any position, and are far less liable to fracture than those in use only two years ago. Moreover, it is now possible to obtain 100-volt lamps consuming only 17 watts and 200-volt lamps consuming only 30. A recent important step has been the discovery that metallic tungsten can be produced as malleable wire and wound on a frame inside the bulb, thus leading to improved durability and strength.

At the same time progress in connection with arc lamps has also been very rapid. Lamps credited with a light of several thousand candle-power and a specific consumption of less than one-third of a watt per c.p. (quite three times as efficient as the older forms of lamps) are now available. This improvement has been secured mainly by the use of special chemically-prepared carbons, and there have also been advances in the design of enclosing globes, reducing the consumption of carbons and expense of maintenance.

The use of luminescent vapours in artificial lighting has also recently received special attention. Steady progress in mercury vapour lamps has been made. A special development has been the introduction of a new lamp using a quartz tube to contain the mercury vapour. These lamps are stated to yield as much as 3,000 c.p. and to consume less than 0.2 watts per c.p., and the life of the tube is put at over 1,000 hours. The lamp has also the special quality of emitting an exceptional amount of non-luminous ultra-violet energy; to this I shall again refer later. At this stage I should merely like to point out that the study of the effects on the human body of radiation of this kind affords a striking example of the desirability of co-operation between the medical expert and the lighting engineer.

Among other developments in vapour lighting I may mention the progress in the Moore system, in which a ramifying tube, often 60 or more feet long and containing rarified gases, is subjected to a high tension discharge at 2,000 volts. The quality of the light depends largely on the nature of the gas used; with nitrogen a pinkish colour is said to be obtained, with carbon dioxide an almost white colour, closely approaching daylight. Quite recently a very distinct red tint is reported to have been secured by the use of the rare gas, Neon.

It need hardly be said that there have also been great improvements in gas lighting. Modern inverted high-pressure gas lamps, run at a pressure of 50 inches of water or more, are claimed to yield as much as 50 to 60 c.p. per cubic foot of gas, which is three times as high an efficiency as was considered possible with the best low-pressure burners a few years ago. The spread of high-pressure gas lighting has attracted much attention. But the steady improvement in low-pressure burners, especially by the aid of the inverted mantle, has been equally remarkable. The latest pattern of low-pressure street lamp is stated to give as much as 30 c.p. per cubic foot of gas per hour.

Equally important have been the developments in methods of controlling gas supply, the introduction of automatic means of lighting and extinguishing street lamps, etc., on which, however, I cannot dilate at present. The durability in mantles, like that of electric lamp filaments, has been much improved, and this has been the means of enabling gas-lighting to be applied to many purposes for which it might not have been considered suitable only a few years ago.

Next we must not forget the rapid advance of methods of artificial lighting, such as acetylene, petrol air-gas, and incandescent paraffin, which are suitable mainly for remote districts where a gas or electric supply is not available. The progress in methods of illumination in country districts has been, in its way, quite as remarkable as that in gas and electricity.

Moreover, attention should be drawn to the extraordinary development in new uses for light which this improvement in lamps has brought about. It is possible that the use of light for special decorative and advertising purposes is only in its infancy, and it is unquestionable that a great deal more care is now being taken to apply light in a wise and careful manner for ordinary every-day purposes. One indication of this change of view has been the attention now devoted to the scientific design of globes and reflectors intended to throw the light where it is needed for specific purposes. It is now realised that the mere production of light in large quantities does not constitute "illuminating engineering," and that it is necessary to make good use of the light we have now learned to produce in such abundance. Epigrammatically expressed, "Light is the cause, illumination the effect."

The Eye Developed to Use of Daylight.

Turning, therefore, to the practical utilisation of light, we find at once that the whole basis of successful illumination is physiological. For it is only through the eye that any impression of the nature of our surroundings is obtained. It is to our knowledge of the eye, therefore, that we must turn in considering which methods of lighting are useful and beneficial and which are harmful and injudicious.

The first thing that strikes us in considering the effect of light upon the eye is that it is only within a comparative short period of history that there has been any artificial illumination worth the name. In earlier days men tacitly assumed that when darkness fell their day's work was done. There was nothing left but to talk round the camp fire for a short time and then fall asleep until daylight returned. Consequently, through countless ages the eye has developed in such a way as to make the best use of daylight illumination; anything, therefore, unquestionably abnormal and distinct from daylight in artificial methods of illumination requires to be accepted with caution.

Indeed, within the last fifty years an entirely new condition of things has come about. As we have seen, new methods of lighting and new uses for light are daily making their appearance, and the phrase "the night when no man can work," has ceased to have any literal value. Step by step with the development of illumination in the last century has been the progress of education and the enormous spread of printed matter. The net result is that we use our eyes far more than our forefathers did. And this raises at once the questions: Are we wise in continuing to turn night into day? Is it not possible that the growing brilliancy of illumination by night may not have an unfavourable effect on physical development? That organs which require the occasional cessation of light are unduly stimulated and that nervous strain may follow? These are questions for the physiologists to study. Meantime, it is interesting to recall an experience in certain zoological gardens devoted to tropical birds, which seems to bear on this point. These birds, coming from tropical countries, were accustomed to practically equal periods of day and night. In our northern latitudes, even if the tropical conditions were most accurately reproduced as regards temperature, humidity, &c., they pined away and died. This was traced to the interruption of their sleep by the unusual conditions of light and darkness. When, by means of electric light, the periods of light and darkness during the day were equalised, the birds recovered their health and well-being. Is it not conceivable, therefore, that there may be a lesson to be drawn from their experience?

Features in Artificial Lighting to be Guarded Against.

However, industrial enterprise and the pursuit of knowledge and pleasure by night continue to demand an increasing use of artificial light. Our first duty, therefore, is obviously to secure that this light is wisely applied, and physiologists can confer a great boon by bringing their experience to bear on the matter. Now, artificial lighting we meet, as often practised, differs radically from daylight illumination in several important respects.

In the first place, it has been proved by photometric measurements that the intensity of illumination from the unobstructed sky is vastly greater than the order of illumination met with in most rooms lighted by artificial means—often as much as 100 times as great. The first danger we must guard against in artificial lighting, therefore, is that of providing too little light. People are constantly engaged in factories, in cotton mills, sewing, lace-making, or working at embroidery and many other processes which are known to be exceptionally trying to the eyes; others are constantly reading fine print, making intricate drawings, &c. How much illumination is required for these various processes?

Even more important is the case of children in schools who are at a critical stage in their development and specially liable to suffer as a result of working under imperfect illumination. This is again a question for the sanitary engineer, the factory inspector, the oculist, the school medical officer, and others concerned to study. We know, for example, that "eye-strain" among school children has been giving concern to the medical profession. How much of these defects of vision is to be traced to poor illumination? And is it not possible that many other nervous defects and symptoms of over-strain are due to the same cause? I may add that the Illuminating Engineering Society has recently been considering the question of the order of illumination required for schools and libraries, and at this discussion the tentative suggestion was made that for ordinary reading an illumination of not less than 2 to 3 foot-candles was desirable, while for special purposes a high value was felt to be necessary.

An equally important deviation from daylight conditions in most artificial illuminants is the concentration of the light. In the case of daylight our illumination is normally derived from a wide expanse of mildly luminous sky. Our artificial sources, on the other hand, consist of isolated, distributed bright points. Moreover, during the last few years the concentrated brilliancy (expressed in candle-power per square inch) has been steadily rising. I have here a table of data collected by Dr. K. Stockhausen, showing how great the change in this respect has been. Now, everyone is aware of the unpleasant effect of looking straight at such a bright source. The eye becomes fatigued and dazzled, so that, on looking away from the lamp, we are often conscious of a distinct "after image," and the greater the brilliancy of the source the more permanent such an impression of glare is apt to be. Professor Burch, of Oxford, who made experiments upon the effect of such bright images on the retina, has even experienced "spots" on the retina which persisted for years. You are also doubtless aware of the special inflammatory conditions which often follow even a short period of gazing at reflection off the sea, or at naked unscreened arc-lights, &c. In ordinary conditions we probably do not meet such extreme cases as this. But the eye is being constantly fatigued by irritations of this character, and at the end of the day bear witness, by a tired feeling, to their exposure to these glaring bright specks of light.

This weakness in artificial illuminants has been well recognised by many engineers. But public opinion still requires to be educated as to the wise use of light and the avoidance of glare of this description. Meantime, we require more definite data. What is the minimum brilliancy which the eye can bear without discomfort? How far is the impression of glare due to contrast of bright objects with relatively subdued surroundings? How can artificial lights be best distributed in interiors so as to avoid these defects? These are questions which are already confronting the lighting engineer to-day. He requires the expert advice of the physiologist and the sanitary engineer in framing recommendations on this point and in driving them home to the general public. Meantime it has been suggested that it would be wise to tone down, by suitable shades, the brightness of sources of light until the intrinsic brilliancy is not greater than that of the average sky, i.e., about $2\frac{1}{2}$ c.p. per square inch, and it is also admitted that we should do all that is possible to keep these bright sources out of the normal range of vision.

Indirect Lighting and Local Illumination.

I may add that there have been other suggestions for avoiding "glare." One method of lighting, the so-called "indirect system," has been much praised for its qualities in this respect. The method consists in screening the source from the eye and allowing its rays to play upon a white ceiling, so that its large and extended white surface becomes the source of light. The use of the ceiling in this manner has been likened to the diffused white sky, and it has a similar effect in producing shadowless illumination.

On the other hand, there are several respects in which this system, in an extreme form, does not exactly resemble daylight, and the impression of "flatness," "something wanting," that it produces is displeasing to people in many instances. Some physiologists in the United States have also contended that it is not physiologically satisfactory, because of the dead level of brightness in the surroundings produced; the eye, they assert, is not satisfied with this uniformity, and desires to rest itself sometimes by occasionally transferring its direction of gaze to some darker object. Again, it is urged that local illumination, in addition to inverted lighting, helps to concentrate the attention on some special spot; for ex-

ample, in a lecture theatre the table at which the lecturer stands and exhibits his apparatus should receive special illumination so that the attention of the audience is involuntarily concentrated upon him. The tendency, therefore, is to advocate a combination of the two systems.

Yet the other extreme, a very strongly-lighted desk, with very sombre surroundings, is also open to objection. Every time the eye strays from the desk the pupil aperture of the eye and the retina have to adapt themselves to the new conditions, and the continual repetition of this process is very fatiguing. Professor L. Weber, of Kiel, has suggested that the contrast between one's book and the surroundings ought not to exceed 100 to 1.

The tendency now is, therefore, to advocate a middle course between these extremes, i.e., moderate general illumination and stronger local lighting from well-shaded lamps in addition. This method frequently recommends itself in libraries. It is used, for example, in the British Museum, in the Patent Office library, and in other cases.

The Effects of Light of Different Colours.

So far we have considered the effect of varying intensities of light. But there is another matter which must not be lost sight of, namely, that artificial illuminants differ considerably from daylight, and from each other, in colour.

I fear I cannot allow myself time to dwell upon some interesting suggestions that have been made from time to time regarding the effects of light of different colours on the human body. These have been studied to some extent by the medical profession, and I may say in passing that the whole question is now becoming very interesting to lighting engineers. For whereas in the past we had to deal with only a few illuminants, such as the oil lamp, the gas flame, &c., which did not differ from each other very considerably in colour, we have now incandescent mantles, flame arcs, mercury vapour lamps, &c., all of which yield light of strikingly different tint.

I may add, too, that we have now at our disposal means of producing light of one colour only in much more powerful quantities than a few years ago, and these facilities might profitably be taken advantage of by medical experts interested in the subject. The matter is essentially one on which the lighting engineer and the medical physiological expert should combine. While leaving this subject for the present, I feel that it is necessary to say something on another question of equal moment, namely, the effects of invisible ultra-violet radiation.

(To be continued.)

TRADE NOTES.

MR. CHARLES R. H. PICKARD, architectural photographer, of Leeds, has requested us to announce his removal to larger and more commodious offices and studios at Brig-gate Chambers, Kirkgate, Leeds; his telephone number will be 4123 Central.

THE Ratner Safe Co., Ltd., have recently secured the following important Government business:—A repeat order for the large cash safes for the Admiralty, for use on H.M. battleships, making 85 in all; 75 improved bent steel safes for the Egyptian Government; and 12 safes for the use of their Majesties the King and Queen, the Viceroy, and their suite at the forthcoming grand Durbar, to be held at Delhi.

THE Registrar of Imports and Exports at Singapore (Mr. A. Stuart) reports that the Singapore Municipal Commissioners have decided to erect an isolation hospital at an estimated cost of about 18,250l. The camp will be divided into sections for cases of small-pox, cholera, and plague.

THE Mansfield Accident Hospital Board of Management have adopted a scheme prepared by the Building Committee, to add to the accommodation at the institution. The scheme includes the erection of a new block, to be known as the King Edward VII. block, three storeys high, and the building of an observation block, which will bring the accommodation up to 110 beds. There will be various internal alterations and additions to the nurses' quarters, and the cost is estimated at 10,000l.

THE British Vice-Consul at Leipzig (Mr. R. Turner) reports that an International Building Exhibition is to be held there in 1913. The exhibition will include sections for building construction, furnishing, the laying-out of gardens and parks, road making, the water supply, drainage, and lighting of towns &c. A copy of the programme (in German) may be seen by British firms at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall Street, E.C.

THE
Architect and Contract Reporter.

FRIDAY, MAY 5, 1911.

Published weekly, subscription 19s. per annum for Great Britain, and for Colonial and Foreign subscriptions £1 6s. 6d. All business communications to the Managing Director,

P. A. GILBERT WOOD,

Publishing Offices, 6-11 Imperial Buildings, Ludgate Circus, London, England.

Telephone No. 4725 Holborn.

Branch Offices at 43 OLD QUEEN STREET, S.W., Messrs. W. HAY FIELDING & CO. being the representatives for all business purposes.

The Birmingham Offices are at 102 COLMOORE ROW.

. Entered in the United States of America as second-class matter.

AGENTS FOR AMERICA:

The International News Co., 5 Bream's Buildings, Chancery Lane, London, England, and New York.

AGENTS FOR CANADA:

Messrs. WM. DAWSON & SONS, Ltd., 91 Church Street, Toronto, to whom all correspondence for Subscription and Advertising Rates should be made.

Subscription \$5.20.

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SOUTH AFRICA: Central News Agency, Ltd.

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EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit the insertion of lengthy communications.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

. As great disappointment is frequently expressed at the nonappearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

ATHENS.—Sept. 25.—An international competition of plans is invited by the Greek Ministry of the Interior (Public Works) for the erection of a Court of Justice at Athens. The cost of the building must not exceed 160,000l. A first prize of 800l., and a second prize of 320l. will be awarded. The Greek Official Gazette, containing particulars (in Greek and in French) may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

BRADFORD.—June 1.—The Board of Management of the Bradford Infirmary invite plans with estimates for a new infirmary in Duckworth Lane. Mr. Keith D. Young, F.R.I.B.A., will act as assessor. Deposit 3l. 3s., which will be refunded on receipt of a *bona-fide* design or if block plan, instructions, &c., are returned within a month after receipt of replies to competitors' questions. The Secretary Superintendent of the Royal Infirmary, Bradford. (For further particulars see advertisement, January 13.)

BURSTOW.—May 26.—The Trustees of Archbishop Abbott's School, Guildford, invite designs and estimates for erection of a pair of semi-detached labourers' cottages on the Rookery Farm, Burstow, Surrey, to contain a living room, a scullery, and three bed-rooms, and to be provided with a water supply and the usual offices and outbuildings. Mr. H. P. Smallpeice, clerk, 138 High Street, Guildford.

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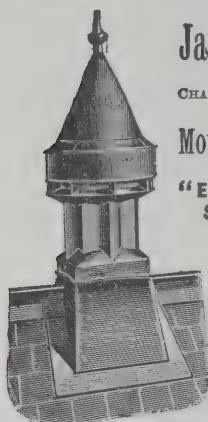
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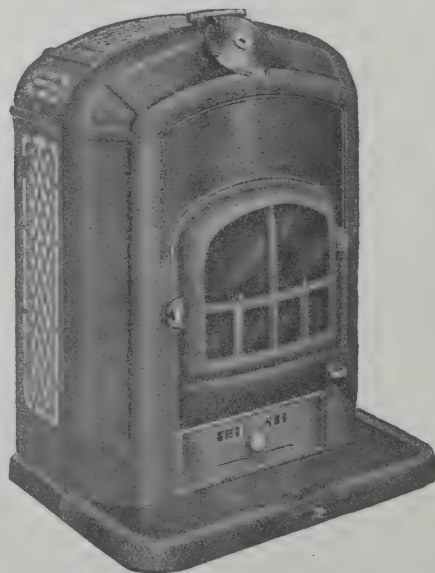
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CHESTERFIELD.—May 15.—The Standing Joint Committee for Derbyshire invite architects practising in the county to submit designs for a Court-house and lock-up to cost 8,000l. Mr. F. Baggallay, F.R.I.B.A., will act as assessor. Deposit 3l. 3s. Apply to Mr. G. C. Copstick, L.R.I.B.A., County Offices, Derby.

DEVIZES.—May 10.—The Committee of the Devizes Cottage Hospital invite competitive designs for providing a new six-bed ward at, and making a general re-arrangement of, their existing hospital (16 beds) at a maximum cost of from 1,200l. to 1,500l. Deposit 10s. 6d. Conditions of competition and particulars of the buildings required will be supplied to intending competitors by Mr. E. Thorp, honorary secretary, Devizes.

NORTHAMPTON.—July 7.—The Borough Education Committee invite architects practising in the borough or county of Northampton to submit on the 7th July plans for a secondary school for girls, to be erected in St. George's Avenue. A plan of the site and a copy of the instructions containing the terms and conditions of the competition may be obtained from Mr. Stewart Beattie, Secretary, Education Offices, 4 St. Giles's Street, Northampton.

WHITLEY BAY.—June 7.—The Whitley and Monk-seaton Urban District Council invite architects practising in Northumberland and the city of Newcastle-upon-Tyne to submit designs for the proposed cemetery buildings. A professional assessor has been nominated by the President of the R.I.B.A. to assist in drawing up the conditions and to advise on the relative merits of the various designs. The site-plan and the conditions can be obtained on a written application being made, accompanied by a deposit of 1l. 1s., which will be returned to every competitor submitting a bona-fide design. The designs, addressed to the Surveyor, are to be delivered at the Council Offices, Whitley Bay, on or before June 7. Apply to Mr. Augustus Whitehorn, Clerk to the Council, 60 Saville Street, North Shields.

CONTRACTS OPEN.

ALTHORPE.—May 20.—For alterations and additions to White House, Althorpe, near Doncaster. Mr. J. W. Ross, Belton, Doncaster.

ALTRINCHAM.—May 17.—For erection of 32 semi-detached cottages and six blocks of cottage flats on the estate, Moss Lane, Altrincham, for the Urban District Council. The work will be let in two contracts, viz., cottages and cottage flats. Deposit 1l. 1s. Mr. E. W. Hilton, architect, Mossburn Buildings, Stamford New Road, Altrincham.

AMMERDOWN BRIDGE.—May 13.—For the taking down and rebuilding of masonry, sustaining walls and general repairs at Ammerdown Bridge, adjoining Ammerdown Park. Mr. H. T. Chapman, county surveyor, Wells, Somerset.

ASPATRIA.—May 10.—For the various works required in the alterations and additions to a house in King Street, Aspatria, Cumberland, for the Aspatria Industrial Co-operative Society, Ltd. Messrs. W. G. Scott & Co., architects and surveyors, Workington.

BARKING.—May 10.—For the works comprised in the extension of the Electricity Works, East Street. Deposit 2l. 2s. Mr. C. F. Dawson, surveyor, Public Offices, Barking, Essex.

BASINGSTOKE.—May 12.—For erection of Drill Hall at Basingstoke, for the County of Southampton Territorial Force Association. Deposit 2l. 2s. Messrs. Hair & Bucknill, architects, 23 Portland Terrace, Southampton.

BERRY BROW.—May 9.—For erection of two semi-detached villas, Berry Brow, Huddersfield. Mr. R. W. Yates, architect, 32 John William Street, Huddersfield.

BILLINGHAY.—For building a Primitive Methodist Church and school at Billingham, near Sleaford. Send names and addresses to Messrs. T. E. Davidson & Son, architects, 1 Eldon Square, Newcastle-on-Tyne.

BRISTOL.—May 13.—For the following works at the Stapleton Workhouse, viz., (1) Erection of a wash-house for the lock ward; (2) repair and pointing of the front boundary walls of the Workhouse, casual wards, &c. Mr. J. J. Simpson, clerk, St. Peter's Hospital, Bristol.

CARTMELL FELL.—May 15.—For the restoration of St. Anthony's Church, Cartmell Fell, Lancs. Mr. J. F. Curwen, F.R.I.B.A., F.S.A., 26 Highgate, Kendal.

CASTLETON.—For building a public hall in Princess Street, Castleton, Lancs., to be used as a moving picture show. Mr. A. E. Millward, Manchester Road, Accrington.

CHELMSFORD.—May 16.—For alterations and additions to the Friars Council school. Deposit 1l. Mr. W. H. Pertwee, architect, Chelmsford.

CLATTERBRIDGE.—May 9.—For erection of bathrooms at Clatterbridge Workhouse, Cheshire. Messrs. J. H. Davies & Sons, architects, 14 Newgate Street, Chester.

CONSETT (DURHAM).—May 16.—For five new shops, entertainment hall, &c., proposed to be erected at Middle Street. Mr. J. J. Eltringham, architect and surveyor, Derwent Street, Blackhill.

CROGLIN.—May 13.—For the whole of the works required in alterations and additions to Church of England schools, Croglin, Cumberland. Mr. J. H. Martindale, F.R.I.B.A., architect, Eaglesfield Abbey Rooms, Castle Street, Carlisle.

DERBY.—May 9.—For proposed Council school for 216 girls, alterations to existing Council school and new cookery centre, Grassmoor, and proposed Council school for 408 boys, Cresswell, for the Derbyshire Education Committee. Deposit 1l. 1s. Mr. G. H. Widdows, A.R.I.B.A., architect, County Education Office, St. Mary's Gate, Derby.

DEVONPORT.—May 11.—For providing and fixing a covered iron balcony to the Workhouse Infirmary at Ford and for the necessary work in connection with same. Deposit 1l. 1s. Mr. C. Cheverton, M.S.A., architect, 64a Chapel Street, Devonport.

DIPTON.—May 10.—For erection of eight cottages at High Stables, Dipton, for the owners of the South Medomsley Colliery Co., Ltd. Mr. J. J. Eltringham, architect and surveyor, Derwent Street, Blackhill, Durham.

DROYLSDEN.—May 17.—For erection of an elementary school for 810 children in Fairfield Road, Droylsden, Lancashire. Deposit 2l. Mr. H. Littler, county architect, 16 Ribblesdale Place, Preston.

DUNDALK.—May 16.—For clearing site and erecting two houses in Barrack Street, Dundalk, for Messrs. Macardle, Moore & Co., Ltd. Mr. J. F. McGahon, architect, 9 Exchange Buildings, Dundalk.

EDINBURGH.—May 15.—For the erection of workshops, &c., in Brighton Street, for the Commissioners of H.M. Works and Public Buildings. Deposit 1l. 1s. H.M. Office of Works, 3 Parliament Square, Edinburgh.

EDINBURGH.—May 15.—For the works to be executed in the construction of an engine shed and relative works at Dalry Road Station, for the Caledonian Railway Company. Deposit 2l. 2s. The Company's District Engineer, Princes Street Station, Edinburgh.

GOSFORTH.—May 9.—For replastering in Portland cement and colouring the interior of Gosforth Church. Mr. J. Watson, Meadow View, Gosforth.

GOOLE.—May 10.—For additions and alterations to the Workhouse hospital. Messrs. Thorpe & Turner, architects, Carlisle Street, Goole.

HALIFAX.—May 19.—For the works necessary in the erection of a detached residence and appurtenances at Skircoat. Mr. T. Kershaw, A.R.I.B.A., architect, 26 George Street, Halifax.

HALIFAX.—May 20.—For the various trades in alterations of Pellon Lane Mills, for Martin, Sons & Co., Ltd. Messrs. C. F. L. Horsfall & Son, architects, Lord Street Chambers, Halifax.

HEMINGBROUGH.—May 20.—For the restoration of the church porch. The Vicar, Hemingbrough, Howden, Yorks.

HORWICH.—May 10.—For erection of an infants' school to accommodate 400 children, at Horwich, near Bolton. Deposit 2l. Mr. H. Littler, county architect, 16 Ribblesdale Place, Preston.

HUDDERSFIELD.—May 18.—For the following works in connection with the erection of covered football stand, area 8,000 square feet, for the Huddersfield Cricket and Athletic Club, viz.: (1) Steelwork and corrugated roof; (2) joiner (wood roof and framing); (3) plumbing and glazing; (4) mason; and (5) painter. Mr. R. W. Yates, architect, 32 John William Street, Huddersfield.

HULL.—May 12.—For the construction of a ferro-concrete chamber and a temporary wood footbridge at Sculcoates Bridge, across the River Hull. Mr. A. E. White, M.I.C.E., city engineer, Town Hall, Hull.

HULL.—May 24.—For the builder's and ferro-concrete work required in the extensions of the electricity works at Sculcoates Lane and in the sub-station in New George Street. Mr. A. E. White, M.I.C.E., city engineer, Town Hall, Hull. Send 1l. deposit to Mr. T. G. Milner, city treasurer.

ISLE OF MAN.—May 12.—For the various works required in laying-out grounds, erection of public hall, shelters, lavatories, &c., on the Villa Marina Estate, Douglas, Isle of Man (in accordance with plans and specifications prepared by Messrs. P. Robinson, F.R.I.B.A., & W. Jones, archi-

terts). Send names and 2l. 2s. deposit by May 12 to Mr. A. Robertson, town clerk, Town Hall, Douglas, Isle of Man.

JERSEY.—May 31.—For the construction of a parish hall in the parish of St. John. Mr. C. G. Bowles, M.S.A., architect, Halkett Place, St. John.

KELVEDON.—For erection of Institute at Kelvedon. Mr. J. W. Start, F.S.I., architect, Colchester.

LEAMINGTON.—May 20.—For alteration of premises at Leamington and known as 9 Waterloo Place and 9 Clarendon Place, to fit the same for the requirements of the Warwickshire Royal Horse Artillery, for the Territorial Force Association. Mr. F. P. Trepass, architect, Church Street, Warwick.

LONDON, N.—May 10.—For certain building work at the Nurses' Home, Edmonton Workhouse, Upper Edmonton, in the erection of an escape stairs and alterations to an existing staircase, for the Guardians of Edmonton Union. Mr. J. C. S. Mummery, architect, 13 Fitzroy Square, W.

LONDON.—May 13.—For erection of two permanent schools, viz., Culvert Road School, to accommodate 1,520 children, and Risley Avenue School (L.C.C. Estate, Lordship Lane), to accommodate 1,894 children, for the Tottenham Education Committee. Application for quantities, accompanied by 2l. 2s. deposit, to be made by May 13 to the architect, Mr. G. E. T. Laurence, A.R.I.B.A., 22 Buckingham Street, Adelphi, W.C.

LYME REGIS.—May 15.—For the construction of the following works, for the Town Council, viz.:—(1) Erection of twelve workmen's dwellings in blocks of four; (2) making a 9-in. stoneware main sewer for the above houses; (3) making a 10-ft. concrete road in front of the said buildings. Deposit 1l. 1s. The Borough Surveyor, Lyme Regis.

MAIDSTONE.—May 15.—For the erection of County offices and making certain alterations to the Sessions House adjoining, for the Kent County Council. Deposit 5l. 5s. The County Architect, 86 Week Street, Maidstone.

MARSDEN.—May 9.—For erection of a Socialist Institute at Marsden, Yorks. Mr. J. Berry, architect and surveyor, 3 Market Place, Huddersfield.

MORLEY.—May 8.—For the whole or any portion of the following works: Mason, joiner, plumber, plasterer, slater, tiler, and painter, required in erection of villa residence in Victoria Road. Mr. T. A. Buttery, Lic. R.I.B.A., architect, Queen Street, Morley, and 1 Basinghall Square, Leeds.

NANTWICH.—May 11.—For carrying out alterations and additions to buildings at the Workhouse. Deposit 5s. Mr. C. E. Davenport, architect, 152 Hospital Street, Nantwich.

NEW GREENCROFT.—For erection and completion of one house at New Greencroft, Durham. Mr. J. Elliott, Heatherlea, New Greencroft, Annfield Plain.

NORTH ELMSTALL.—May 17.—For erection of six cottages, &c., at Wrangbrook Lane, for the Hull and Barnsley Railway Company. Deposit 1l. 1s. The Engineer, 9 Charlotte Street, Hull.

NUNEATON.—May 15.—For erection of iron and steel balconies for consumptives at the infirmary, for the Guardians. Deposit 1l. 1s. Mr. F. W. Allen, master at the Nuneaton Workhouse.

ORCOP.—May 10.—For erection of a vicarage house at Orcop, Hereford. Deposit 1l. 1s. Mr. E. G. Davis, M.S.A., architect, 132 Widemarsh Street, Hereford, and at Monmouth.

PEMBURY.—May 22.—For the execution of improvements at the Pembury Council School. Mr. A. T. Simpson, correspondent, 23 Church Road, Tunbridge Wells, Kent.

PONTEFRAC AND FRYSTON.—For erection of (Contract No. 1) two villa residences at Pontefract; (2) shop, five houses, stable, &c., at Fryston. Forward names to Messrs. Garside & Pennington, architects and surveyors, Pontefract, Castleford, and Goole.

ROCHDALE.—May 10.—For the following for the Gas and Electricity Committee:—(1) Erection of weigh office, fence walls, &c.; (2) supply and erection of a wrought-iron roof in connection with the new high level road at the gasworks. Mr. T. Banbury Ball, manager, Gasworks, Dane Street, Rochdale.

ST. AUSTELL.—May 17.—For alterations and additions to the St. Austell Police Station, Cornwall. Mr. A. E. Brookes, county surveyor, Truro.

SCOTLAND.—May 11.—For the several works required in altering, enlarging, and fitting-up two bathrooms and lavatories, &c., and erecting a new boiler-house, for the Annan Combination Infectious Diseases Hospital. Mr. D. A. Knox, clerk, Annan.

SHAW.—May 11.—For erection of proposed church hall. Mr. J. H. Mills, architect, 9 Oak Street, Shaw, Lancs.

SHEFFIELD.—May 11.—For the work required in connection with alterations, &c., to the sanitary conveniences at the Children's Homes Headquarters, Smilter Lane. Mr. G. D. Baxter, clerk of works, Fir Vale Workhouse, Sheffield.

SHIPTON BELLINGER.—May 16.—For erection of a Council school for 99 children and teacher's house at Shipton Bellinger, Hants. Deposit 2l. 2s. Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

SILLOTH.—For the various works in connection with the erection and completion of house and shop in Eden Street. Mr. F. L. Barrett, joiner, 14 Caldew Street, Silloth.

SMEETH.—May 9.—For the execution of repairs to teacher's dwelling-house at the Council school. Mr. John Tippet, correspondent, Wye, Ashford, Kent.

SOUTHAMPTON.—May 8.—For erection of a new outpatient department, for the Committee of the Royal South Hants and Southampton Hospital, Southampton. Deposit 2l. 2s. Applications must be made by letter by May 8 addressed to Mr. T. A. Fisher Hall, secretary.

STRATTON ST. MARGARET.—May 9.—For ventilation, &c., of old and young men's day rooms at the workhouse, Stratton St. Margaret, Wilts. Mr. J. P. Kirby, clerk, Union Offices, Swindon.

UPWELL.—May 10.—For pulling down old and building new Sunday school to Baptist Church, Upwell, Wisbech. Mr. W. H. H. Davis, architect, 2 York Row, Wisbech.

WALES.—May 5.—For the erection of a school at Craigyrees (Penygraig), to accommodate 400 boys, 400 girls, and 400 infant scholars, for the Rhondda Urban District Council. Send 2l. 2s. to the accountant. Mr. J. Rees, architect, Hillside Cottage, Pentre.

WALES.—May 10.—For alteration and renovation of Salem (C.M.) Chapel, Clydach-on-Tawe. Rev. J. Vincent Thomas, The Manse, Clydach-on-Tawe, Glamorgan.

WALES.—May 10.—For the rebuilding of the Pandy Inn, Tonypandy, for Messrs. The Rhondda Valley Breweries Co., Ltd. Deposit 2l. 2s. Mr. R. S. Griffiths, M.S.A., architect and surveyor, Tonypandy.

WALES.—May 11.—For erection of a farmhouse at Tycanol Farm, Ystradgynlais, County Brecon. Mr. B. L. Pritchard, 21 Castle Street, Brecon.

WALES.—May 13.—For the erection of eight houses at Sunny Bank Road, Griffithstown, Mon. Mr. D. C. Udell, architect and surveyor, Commercial Street, Pontypool.

WALES.—May 13.—For erection of 25 houses in Garden Street, Llanbradach. Mr. J. H. Phillips, F.R.I.B.A., architect, 7 Pembroke Terrace, Cardiff.

WALES.—May 13.—For the erection of a stores adjoining bakery at Ynysybwll. Mr. P. J. Jones, architect, Church Street, Pontypridd.

WALES.—May 15.—For making alterations and additions to Bethania Chapel, Dowlais. Deposit 1l. 1s. Messrs. Johnson & Richards, architects, Merthyr Tydfil.

WALES.—May 16.—For erection of a schoolroom at Thomastown, near Tonyrefail, for the Welsh Baptist denomination. Mr. P. J. Jones, architect, Church Street, Pontypridd.

WALES.—May 16.—For erection of the Monmouthshire County Training College, principal's residence and lodge at Caerleon, near Newport, Mon. Deposit 3l. 3s. Messrs. Alfred Swash & Son, F.R.I.B.A., Midland Bank Chambers, Newport.

WALES.—May 18.—For erection of a drill hall at Towyn for the Merionethshire Territorial Force Association. Deposit 1l. 1s. Mr. R. W. Davies, M.S.A., architect and surveyor, Carno, Mont.

WENFORD BRIDGE.—May 15.—For building a further china clay kiln and tanks at their works, Wenford Bridge, on the L. and S.W. Railway, for the North Cornwall China Clay Co. (1908), Ltd. Deposit 2l. Mr. W. H. Patchell, M.I.C.E., Caxton House, Westminster, S.W.

WEST BROMWICH.—May 12.—For the erection of new classrooms and cloak room at Lyng School, and for manual instruction rooms at Spon Lane School. Deposit 1l. 1s. each. Mr. A. Long, architect, West Bromwich.

WEST DEREHAM.—May 11.—For new schoolroom, stable and coach-house, U.M.C., West Dereham, Norfolk. Messrs. J. L. Bennett & Son, Downham Market.

WINSFORD.—May 20.—For additions and alterations to the Darnhall Endowed School. Deposit 10s. 6d. Mr. J. H. Cooke, clerk to the Governors, Winsford, Cheshire.

WOOTTON BASSETT.—May 12.—For erection of (1) police station, and (2) Sessions Hall, at Wootton Bassett, Wilts. Deposit 1l. 1s. Mr. J. G. Powell, county surveyor, Trowbridge.

TENDERS.**BUCKDEN (HUNTS).**

For the erection of a lecture hall for the Trustees of the Wesleyan Church, Buckden. Mr. THOMAS COCKRILL, architect, 8 Bank Buildings, Bedford, and Biggleswade.
 Wrycroft & Sons £459 10 0
 PAGE & SON, Buckden (*accepted*) 437 5 0

CASTLEFORD.

For proposed house and shop, Beaucroft Road. Mr. F. SCATCHARD, architect and surveyor, Castleford.

Accepted tenders.

R. Walker & Sons, excavators, bricklayers, and masons £321 0 0
 R. Gillatt, carpenter and joiner 126 15 0
 R. Nicholson, plumber and glazier 40 0 0
 T. Dalton, slater 25 16 0
 F. Beighton, plasterer 23 0 0
 (Excluding shop fronts, drainage, and fixtures.)
 All of Castleford.

CLIFFORD CHAMBERS.

For erection of new church and schools at Clifford Chambers, Glos. Messrs. KNIGHT & HEBERY, architects, Stratford-on-Avon.

Dallow & Son £730 0 0
 Commander 728 10 0
 Harris 639 0 0
 Griffiths 565 0 0
 Brisker 555 19 6
 Harris & Sons 549 0 0
 Cox, Stratford-on-Avon (*recommended*) 532 0 0

EAST GRINSTEAD.

For the completion of the Church of St. Mary the Virgin. Mr. W. THOROLD LOWDELL, architect, 25 John Street, Bedford Row, W.C.

G. Wells £2,583 0 0
 Brooker Bros. 2,523 0 0
 C. & H. Rice 2,463 0 0
 I. LUXFORD, East Grinstead (*accepted*) 2,378 0 0
 Gasson Bros 2,369 0 0

For the construction (reinforced concrete) of an open-air swimming bath. Mr. W. E. WOOLLAM, engineer and surveyor.

Mitchell & Sons £500 0 0
 Kirk & Randall 480 0 0
 Moss & Sons 474 0 0
 J. & W. Stewart 420 0 0
 Yorkshire Hennebique Contracting Co. 398 0 0
 Higgs & Hill, Ltd. 384 0 0
 Nicholds 376 17 6
 Mead & Pearce 369 15 6
 Liverpool Ferro-Concrete Contracting Co. 365 0 0
 Malcolm Macleod & Co. 358 0 0
 Streeter 327 4 8
 Crosby & Co. 310 0 0
 Somerville & Co. 280 0 0
 Lewis, Rugg & Co. 255 0 0
 Elliott & Co. 250 0 0
 Catley 220 0 0
 Surveyor's estimate 250 0 0

IRELAND.

For rebuilding mills, John Street, Cork. Messrs. W. H. HILL & SON, architects, Cork.

O'Mahoney £3,790 0 0
 Delaney & Co. 3,341 0 0
 Kelleher 3,285 0 0
 E. & P. O'Flynn 3,224 16 6
 Murphy 3,220 0 0
 O'Connell & Co. 3,198 10 1
 Kelleher 3,163 1 4
 Meagher & Hayes 2,965 0 0

Timber Storey Posts.

O'Mahoney £424 0 0
 E. & P. O'Flynn 348 14 5
 Meagher & Hayes 337 0 0
 Delaney & Co. 332 17 8
 O'Connell & Co. 331 5 10
 Murphy 329 0 0
 Kelleher 292 8 0
 Kelleher 286 2 7

FELIXSTOWE.

For erection of six houses at Felixstowe, for the Coast Development Corporation, Ltd.

Fisher & Woods £2,365 0 0
 Gayford 2,100 0 0
 Grimwood & Sons 2,095 0 0
 Trudgett 2,088 10 0
 McCormick & Sons 2,055 0 0
 EDGERTON, Ilford (*accepted*) 1,890 0 0

WALES.

For the erection of additions to Sydfel House, Bargoed, Wales. Mr. P. VIVIAN JONES, P.A.S.I., architect. Hengoed.

Jones £670 14 2
 Lee 585 0 0
 Vodden 493 0 0
 Brown 424 10 0
 F. D. WATKINS, Bargoed (*accepted*) 420 0 0

For the construction of a storage reservoir to contain 500,000 gallons, and for providing and laying 2,067 lineal yards or thereabouts of 3-in. cast-iron water mains, in the parish of Penttyrch. Mr. J. HOLDEN, A.M.I.C.E., engineer, Llandaff.

Rees £2,930 19 2
 Webb 2,721 19 7
 Sutherland 2,356 4 4
 Davies 2,344 13 0
 Collins & Co. 2,305 1 6
 Barnes, Chaplin & Co. 2,292 17 1
 Strachan 2,275 17 9
 Pomeroy & Co. 2,252 14 10
 ROWELL & SONS, Chipping Norton (*accepted*) 2,221 12 8

For erection of a fire station and offices in Bishop's Road, Whitchurch, near Cardiff, for the Whitchurch Parish Council. Mr. C. H. KEMPTHORNE, architect, Cardiff.

Tomkinson £1,089 0 0
 Knox & Wells 1,047 0 0
 Griffiths & Sons 1,040 0 0
 Gummer 1,009 5 0
 Thomas & Co. 1,000 0 0
 Evans & Bros. 998 0 0
 Gibby & Cleak 995 0 0
 Davies & Son 985 0 0
 Rendell 979 0 0
 Stephens 970 0 0
 Hanson 922 7 6
 Williams 919 0 0
 Parsons 915 19 3
 Vickery Eros. 890 0 0
 Haines 889 0 0
 BRYAN, Cardiff (*accepted*) 879 17 6

For erection of a stable for sick horses at the cleansing dépôt, Cardiff, for the Corporation.

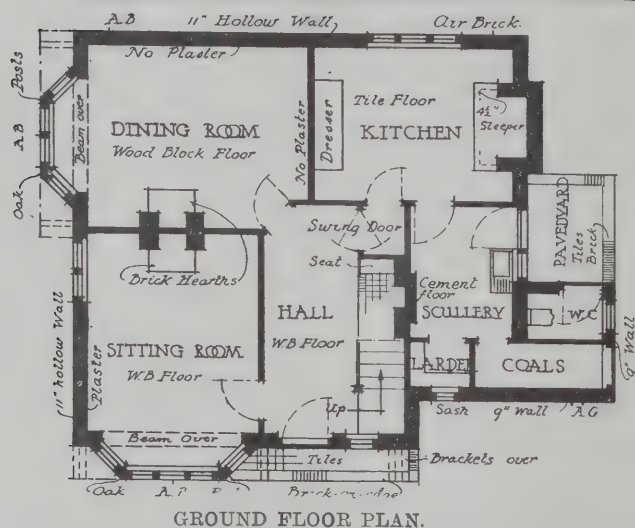
Cox £619 14 7
 Thomas 555 15 7
 Hatherley & Co. 539 0 0
 Tucker Bros. 526 0 0
 Bryan 522 15 6
 Symonds & Sons 518 0 0
 Allan 515 9 1
 Turner & Sons 508 2 3
 DAVIES & SONS, Cardiff (*recommended*) 490 0 0

For erection of 20 workmen's houses and 11 officials' houses, comprising the first section of the Oakdale Village, Blackwood, Mon., for the Oakdale Navigation Colliery Co., Ltd. Mr. A. F. WEBB, architect.

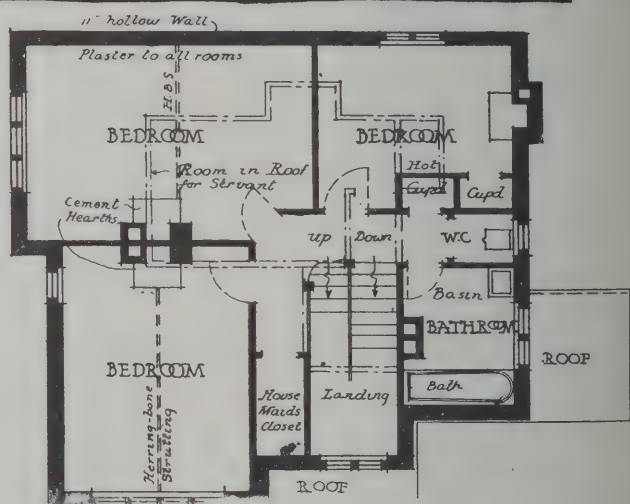
Jevens £9,700 0 0
 H. Smith 9,520 0 0
 Mathews 9,388 0 0
 Marsh 9,075 0 0
 Vodden 8,190 0 0
 G. Smith 7,767 0 0
 Newcomber 7,706 0 0
 Thomas 7,645 0 0
 Passmore & Perkins 7,608 0 0
 Gregory Bros. & Pember 7,418 0 0
 Lee 7,289 0 0
 DAVIES & WILLIAMS, Blackwood (*accepted*) 6,758 0 0
 Edwards 6,550 0 0
 King & Co. 6,268 0 0



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 PROPOSED COTTAGE DESIGNED BY H. DRYANT-NEWBOLD ARCHITECT 21, GT. PETER, ST.
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FIRST FLOOR PLAN.

THE BUILDING TRADES EXHIBITION.

THE visitor who conscientiously follows the order of the catalogue finds himself first opposite the stand of *William Mallinson & Son*, London, No. 1, Row A, where there is a good collection of seasoned hardwoods specially selected for high-class joinery, for interior decoration, and for shop fitting. Particularly noticeable is the carved and polished panel, 13 ft. by 3 ft. 8 in., in African mahogany; this is a very exceptional length. Inside the stand there is a most elaborate piece of Grinling Gibbons carving, executed by Messrs. H. H. Martyn & Co., of Cheltenham.

Next comes the stand of *J. Sagar & Co., Ltd.*, London, with various joiners' machines in operation. Amongst them is a patent combined chain cutter and hollow chisel mortising and boring machine for hard and soft woods, also sawing machines, a vertical spindle moulding and shaping machine, &c.

The *Hempstead Patent Brick Company* have utilised the "Hempstead" hollow terra cotta partition blocks for enclosing their stand by the Addison Road entrance. The sample blocks range from 1 1/4 inches to 4 1/2 inches. Besides partitions the company make tubes and blocks for fireproof floors, fixing bricks and ceiling tiles. The partition openings are equipped with the "Hempstead" patent fireproof doors,

which have been most successfully tested up to 2020° Fahr. The doors consist of wrought-iron or steel frames filled in with hollow porous blocks, coated with Keene's cement and sand.

Knowltons, Ltd., Southampton, have sent, to this exhibition several pieces of their old stone house and garden furniture, which is guaranteed to be absolutely frost and weather-proof, and to be everlasting. It has a handsome appearance when moulded into vases and sundials. There are a number of glazed and faience fireplaces and art tiles.

The *Interoven Stove Co., Ltd.*, show their highly ingenious combined sitting-room interior and cooking range. This is guaranteed to be an entirely efficient range, which when desired can be converted into a slow combustion grate identical in appearance with an ordinary interior. The oven is hidden behind the sham canopy; the hot plate when not in use takes the place of the sloping brick at the back; the high pressure circulating boiler (if included) can be heated when either the oven or the open fire is in use. The "Interoven" is fitted into a 14 in. deep opening if without the boiler, and is ideal for flats, bungalows, and other places where a full-size kitchen range is undesirable. It is little wonder that it has been extensively adopted by the Co-partnership Tenants.



TOWN PLANNING-MODERN HOUSE & COTTAGE EXHIBITION
 PROPOSED COTTAGE BY H. DRYANT-NEWBOLD ARCHITECT
 DRAWN BY O. NEWBOLD

The speciality of the *Bromyard Tileries, Ltd.*, is the "Semincostic" paving. This has been designed to meet the demand for a tessellated tile paving possessing the finished appearance of encaustic and competing in price with the common quarry. It is made in squares, octagons, strips, &c., of half an inch thick, and weighs 45 yards to the ton. Any colour of dots or border may be ordered. The stand is covered with the firm's Linton red roofing tiles, which are guaranteed not to laminate or flake.

The "Watkin" switch is effectively demonstrated on Stand 133, Row F, by the *Adams Watkin Co., Ltd.*, 36 Victoria Street, S.W. This patent is, of course, a device by which electric current for lighting, heating, or power purposes can be regulated in very much the same way as a gas flame is controlled by the tap. A certificate of Faraday House is technical assurance as to the real diminution of current. The gain in enjoyment of a controllable light from dim to full-on would alone have justified the invention. Not the least rewiring is necessary, for the "Watkin" simply replaces the ordinary switch. The invention has been very extensively adopted.

Although the *Præd Patent Safety Gas Light Co., Ltd.*, have a position in Row B against an outer wall they have to take their generating plant outside the building in accordance with the regulations enforced at Olympia. But the brilliancy of the stall is due to the air gas which is conveyed to it. The gas is produced by passing air through a chamber in which it is associated with petrol vapour, the product being a gas with an intensely hot blue flame which when burning closely resembles the Bunsen flame. It is called "safety gas" because it has no explosive qualities, thanks to the small percentage of petrol vapour. The fact that it is composed almost wholly of air renders it free from deleterious impurities. The gas is used for heating and cooking as well as lighting. The plant is compact and very easily managed.

Bell's United Asbestos Co., Ltd., show "Poilite" as made into weather-resisting asbestos roofing tiles, fireproof asbestos sheets, veneered sheets and compressed sheets. "Poilite" tiles are made 3-16 in. thick for fixing at 13½ centre for large roofs and are guaranteed for twenty years. The asbestos cement sheets are made in any size up to 12 ft. by 4 ft., and from 5-32 in. to 1 in. in thickness.

They can be cut with carpenter's tools, and are fixed with nails or brads. "Poilite" compressed sheets are supplied 4 ft. square for electrical purposes.

The Manu-Marble Co., Ltd., Gloucester, again show their reconstructed marble as made for floorings, wall linings, shop fronts, &c. This material will stand weather, water, and heat, and is polished, cut, and tooled in the same way as natural marble. The manufacturers say that it can be obtained at very little above the cost of glazed tiles, while giving all the effects of the most expensive marbles, granites, and mosaics, but without their defects. Manu-marble is made in practically every class of natural stone, so that a beautiful range of colours and designs is available. The standard size of the slabs is sixteen inches square, or they may be obtained in oblong form fourteen inches by twenty inches.

What might have been an accident fraught with serious results occurred last week on the stand of the *British Ceresit Waterproofing Co., Ltd.*, in the balcony at Olympia. A feature of the exhibit was four large glass columns some five feet high and ten inches in diameter imbedded in pedestals made of cement mixed with "Ceresit" and containing water to show the imperviousness of the preparation to moisture. On Wednesday the sun was shining fiercely on one of these, and the glass not being able to expand broke, letting out the water, which flowed over the stand and down from the balcony on to the exhibit beneath. Fortunately, the glass column, although badly fractured, remained in position until removed by a member of the "Ceresit" staff. Had it fallen over the balcony rail—to which it was close—the results might have been disastrous.

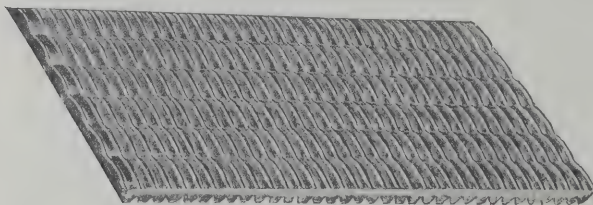
An important display is made by the *Ransome-verMehrs Machinery Co.*, Caxton House, Westminster. Four of their patent concrete mixers have been brought to the show, viz. No. 4 size having a 40 cubic feet batch, No. 1 10 cubic feet batch, No. 0 6 cubic feet, and the hand-mixer with a 2 cubic feet batch. All are made by Messrs. Ransomes & Rapier, Ltd., of Ipswich. The No. 1 and No. 0 mixers are in use by several large contractors, who give most satisfactory testimonials as to their efficiency; the firms include Geo. Trollope & Sons and Colls & Sons, Ltd., Perry & Co. (Bow), Ltd., Morrison & Mason, Higgs & Hill, Ltd., Empire Stone Co., Ltd., Geo. Bell & Sons, Ltd., and Geo. Wimpey & Co. The "RvM" mixer, No. 0 size, is a new type specially designed for contractors engaged in works of short duration. In addition to the mixers there are three types of corrugated steel sheet piling, a crane skip, a new cement testing machine, a concrete vibrator, and a Ransome jiggling screen for gravel or other material where fine particles have to be separated from larger ones. Machines are shown in the Gallery, Stand 26, as well as in Row K, Stand 212.

The Aerograph Co., Ltd., can always be sure at any exhibition of attracting an audience when they give demonstrations with their spray painting apparatus for plain and ornamental work in oil, varnish, or water-colour. The speed and efficacy of this machine, which converts a plain surface into a decorated one in a second or two, exerts a perennial fascination. The outfit is most compact, consisting of the hand-piece or "aerograph" proper, an air-compressor, paint-pot and tubes. On the stand are also "Aerograph" machines for whitewashing, lime-washing, and spraying disinfectants, which are especially useful on very rough surfaces and for crevices.

Henry Hope & Sons, Ltd., Birmingham, are specialists in metal casements. Their stand in Row E, No. 93, shows domestic casements and frames with leaded lights in mullioned windows and examples of casement windows of large size suitable for offices and public buildings (similar to the nine thousand supplied to the Royal Liver Buildings, Liverpool, and the Calico Printers' Offices, Manchester). Hope's casements are all fitted with their patent two-point handle, which holds the casement open at 1 inch or ¼ inch as required without allowing any rattle. The stand also shows kupronised steel doors glazed with fireproof glass; cast-lead rain-water heads and pipes; patent glass roofing, and bronze door furniture.

The Guildcor Hinge Co., Ltd., demonstrate the advantages of double-action and single-action doors fitted with the patent "Guildcor" sight-proof and draught-proof hinge, which entirely seals the aperture between the frame and door whether the latter be opened or closed. A great feature of the hinge is that the customary floor plate is dispensed with as the necessary springs are contained in the steel barrel extending from the top to the bottom. If desired the Guildcor hinge check may be used in conjunction with it. For ordinary purposes a Guildcor hinge without a spring is suitable. This new hinge is easily fixed.

The Maximum Light Window Glass Co. (E. J. Dobbins, prop.), 28 Victoria Street, London, S.W., are exhibiting a very interesting form of rolled window glass—"Maximum Daylight Glass." This is a scientific combination of lenses and prisms in sheet form; it may be cut to ordinary window squares, fixed directly in wood or iron sashes. It is easily fixed and has the effect of deflecting and diffusing the daylight to parts of a room or building distant from the windows. The actual increase of light in many cases is from 5 to 20 times. The use of daylight-increasing glasses is becoming more popular with architects and builders, and the collective and dispersive power which the "Maxim" has makes it useful for all classes of buildings such as mills, warehouses, shops, offices, schools, flats, residences, &c. By glazing ordinary windows with the glass a considerable saving is effected in the cost of artificial lighting and perfect daylight is substituted for semi-



gloom. More than 60,000 windows have been glazed in London alone, and some of the very largest property owners have adopted this system as the most practical and permanently effective means of gaining additional daylight. The "Maximum Daylight Glass" is distinguished by the lense-prism combination as shown above. The latest product of the Maximum Light Window Glass Co. is a new form of figured rolled Max Silk Glass. This product has a moiré or silk effect, and is most suitable for partitions and door glazing. The lines are practically parallel, making any window glazed with same easily cleaned. This glass is made in various tints and is stocked now by the principal glass merchants throughout the country.

The Nautilus Fire Co., Ltd., have brought together many excellently designed "Bush" fire interiors on Stand 230, Row L. These were first exhibited in 1909 at Olympia, and the Company report that its success has been so phenomenal as to lead them to specialise in design. This patent slow combustion fire has a loose front and ashpan fitted with a grid ventilator for controlling draught. The fire rests on a pyramidal brick surrounded by a cast-iron grid sloping towards the back. The "Nautilus" fire has been on the market for a longer period. It was first brought out as a dog grate and then adapted to an interior. The name is derived from the nautilus shell shape of the stove. The products of combustion rise from the fire, and after revolving within the hood pass off through two exit nozzles into the small flues leading to the chimney. The heat is radiated directly from the open fire and indirectly from the superheated canopy and the hot-air chambers on each side. A damper controls the chimney draught with exactitude. The Nautilus grate has proved most effective when introduced in the place of fires which suffered from smoky chimneys.

Messrs. Messenger & Co., Ltd., Loughborough, are exhibiting on Stand 230, Row L, a few of their specialities. This well-known firm after an experience of over half a century are making a new departure in taking up hot-water supply independently of heating. Unqualified success has at once met the "Meseta" boiler, for it has gained the full approval of architects and the trade alike. Very little attention is required by the "Meseta," for the fire burns 12 or 15 hours on a charge of 30 lb. of coke and cinders, and gives a hot-water supply of from 25 to 30 gallons per hour at about 180 degs. during that time at a cost of 2d. The boiler has a water-way bottom and large mud-holes for cleaning. The "Quorn" sectional boilers are so familiar as scarcely to need comment. It is claimed for them that they consume from 25 per cent. to 33½ per cent. less fuel than any other sectional boiler on the market. Amongst the radiators on the stand is Pattern R 16, designed for use in churches and other buildings where height is not such a matter of importance as a large area of heating surface. The Loughborough boiler as applied to heating motor-houses is also shown.

The Eagle Range and Gas Stove Co., Ltd., show in operation their latest type of the Premier Gold Medal Eagle Range, which has several improvements over the Premier range of 1907, and this was in its turn an advance on the Company's preceding efforts to secure a faultless range. Also in operation is the Eagle "Imperial" grate exhibited

for the first time. In this the adjustable front bars are raised to the ordinary height, lowered to make a semi-bar fire, or pushed out of sight by means of the poker. The combustion is regulated by hinged draught doors before the ashpit. Other Eagle patents shown are a "New Portable" range, a "Governor" and "Premier" grates, a chimney-cowl, and an independent hot-water boiler and closet.

Mr. William Boby, Thornton Heath, has placed on his stand two types of water-softeners, one the "Simplex" for general purposes and the other "Type K" for domestic supply up to 200 gallons a day. This latter is quite automatic in its operations, requiring no chemical solution with its inevitable weighing and measuring. It can be connected to an existing cistern and is usually placed at the top of the house or water-tower.

Messrs. Allen & Norris exhibit the "Eureka" sash balance (Neren's patent), which replaces the old-fashioned clumsy weights, pulleys, and cords by a neat spring-balance, which silently lifts the sash to any height and counterbalances it. Sliding sashes can therefore be used in solid frames.

The Sussex Brick and Estates Co., Ltd., show their "Southwater" pressed facings and engineering bricks, "S.B.E.C." purple and mottled kiln stocks, and broken coloured reds, Warnham common pressed bricks, &c. These goods have a good reputation in Sussex, Surrey, and Hampshire.

Messrs. J. & R. Corker, Ltd., Ferham Works, Rotherham, have sent a selection of "Drawwell" fire grates to the stand of the *Albion Iron Co. (London), Ltd.* This grate, it may be remembered, was placed in the final tests of the Coal-Smoke Abatement Society in 1906 to ascertain (1) the amount of smoke given off, (2) the heating power, (3) the economy of fuel and the suitability of the various stoves for the office and household purposes. The Drawwell grate is fitted with an adjustable canopy, semi-circular and solid brick back in front sloping inwards, the bottom forming a dish or basin with loose grate to lift out. There is a ventilating fret with ash-pan attached. When the fire is out the bottom grate can be removed if necessary, and the dust and ashes carried away in the pan without causing them to fly about the room. On the stand the grate is seen in different finishes and set in a number of attractive fireplace suites.

Kitchen equipment may not at first sight seem very constructional, but it undoubtedly has as much, if not considerably more, to do with the selling or letting of house property than subtle refinements in planning or elevation. Consequently Stand 84, Row E, is important to the architect, the builder, and the housewife alike. Here *Messrs. Frank Staines & Co., Ltd.*, 38 Buckingham Palace Road, S.W., show their patent greaseproof sinks and "Easy" racks, which after acquiring a big reputation in Australia were brought into this country just over a year ago. Short as the interval has been, the inventions are already in use at the depots of the Aerated Bread Co. and *J. Lyons & Co., Ltd.*, the Savoy and Charing Cross Hotels, Selfridge's and many other places. The wooden sinks consist of three divisions. The first is the rinsing pocket, the hot water from which overflows first into the second division, where all the washing is done, and then into the third or slop division, which is fitted with pierced and removable iron receptacles to receive all solid matter from the overflow or the slops. Each division is drained from one another by lifting a patent gateway plug; a standing waste to outlet is in the slop division. When the crockery has been thus quickly and effectively washed in the Staines sink it is put away into no less ingenious trays and racks, with an immense saving in labour and breakages in consequence. There are absolutely no mechanical devices to get out of order, and there is no expensive plumbing work in these greaseproof sinks. The invention would seem to be about to enjoy a huge success in this country, where the cry of "No more wiping up" will be a welcome sound.

The Gypsum Mines, Ltd., Robertsbridge, show their Sirapite plaster rendered and finished in various ways. Something like three hundred thousand tons of this material have been sold for work both great and small. The advantages claimed for it are (1) great strength and adhesiveness, (2) freedom from glue or other organic compounds, (3) rapidity of application, and (4) only two coats are required. On the stand there are also panels and other work rendered in Sirapite and finished in the Company's Keene's and Parian cements, &c.

Candy & Co., Ltd., make a good display of their "Devon" fires in glazed briquettes, tiles, and faience work. These fires are supplied in a large variety of artistic designs to suit any style of room. They give out great heat with very little coal consumption, and they require a minimum of attention.

With their well-designed mantels they make an ornamental feature. The "Devon" fires were, it will be remembered, placed first in the recent official tests of domestic fires carried out jointly by H.M. Office of Works and the Smoke Abatement Society. The consumption of fuel and the production of smoke were each one-quarter less than the average of the 36 competing grates.

One of the most recent window improvement patents is to be seen at the stand of the *Bramble Joinery Co.*, Coventry, and it is called the "Gamble" beadless window. This window dispenses altogether with sash weights and cords, parting beads and stop beads. The sashes can be taken out of their frames and cleaned or painted by anyone standing within the room.

The *British Stone and Marble Co., Ltd.*, Craven House, Kingsway, W.C., are showing an interesting novelty at Stand 148, Row G, in addition to their well-known reconstructed stone and their glazing bar, to which we referred last week. This is the application of a stone-face to a hollow concrete block made in the ordinary way—we believe the Company themselves use the (U.K.) Winget Machine. The blocks, however, can be obtained either ready stone-faced from their works at Ponders End, Middlesex, or the firm will supply the stone-face only with its prepared inner surface to block manufacturers. To all intents and purposes a building formed of this construction is the same as regards appearance as a stone building, with the advantage of a hollow wall and its consequent reduction in weight and other advantages. The blocks are sold at a price which will ensure the total cost of the structure comparing very favourably with brick walling, and at a considerably less cost than a stone building.

Ripolin, Ltd., 35 Minories, E.C., present two novelties at Stand 149, Row G. The first is "Fletto" undercoating sold ready for use in white and eight colours for interior work. The great characteristic which will appeal at once to the decorator is its quality of "flowing out." It dries in a few hours to a hard non-porous surface and forms an ideal ground for Ripolin gloss, flat or semi-gloss finish. The second novelty is "Ripolin Stopsap." As its name indicates, this material is primarily for preventing sap and knots staining through white or light finished work. It can be used direct upon the wood or upon old or new paint surfaces at any stage previous to the application of the finishing coat. For new work it is preferably applied on priming. It may be used advantageously on distemper filling in place of oiling-in. Both these materials should receive early attention from painters and decorators, who will find in them remedies for too familiar troubles.

The *Granite Silicon Plaster Co., Ltd.*, show at Stand 58, Row D, their Special Cromoleth Plaster, Granite Plaster, Tilephast Plaster, and a 2-in. Granite Plaster Solid Partition. Granite Plaster is applied in the usual way, but produces such a hard, smooth and germ-proof surface as to earn the name of granite. The Tilephast Plaster is especially adapted for soffits of concrete or ferro-concrete, fire-resisting floors, &c. The partition has a core of expanded metal lathing held in position by vertical rods, and then plaster is put on each side to a thickness of one inch. The 2-inch partition is as sound-proof as a 4½-in. brick wall, as well as being strong, rigid, and fire-resisting.

The *Rawdon Foundry Co., Ltd.*, Moira, Leicestershire, have in motion a sanitary pipe machine, screw type, for the manufacture of socketted pipes, chimney-pots, ridge tiles, conduits, &c.; also a clay pug-mill and mixer for converting clay from the dry state to the plastic. The sanitary pipe-testing machine should not be overlooked.

The *Comet Telescopic Mast Co.*, of 20 Bucklersbury, E.C., exhibit at Stand 85, Row E, their telescopic mast, which consists of a series of welded steel tubes of gradually decreasing thickness, and so adapted as to slide telescopically. Three collars are affixed to each section, one top and two at the bottom; the top and bottom collars are for the purpose of strength, and the intermediate one, which is situated near the foot of the section, acts as a stop with the top collar of the preceding section, thus obviating the possibility of drawing the sections out too far. A drum driven by gearing and a chain and sprocket wheel is mounted inside the pedestal of the mast, with a crank handle shaft. A perforated, untempered steel band is coiled round the drum; the thickness of this band varies according to the size of the mast, and the band is to be hoisted. Leaving the drum this band passes up between two rollers, one of which is provided with teeth to fit the perforations of the band. Locking devices and other safeguards are introduced, but the mechanism is throughout so strong and simple that the probability of failure is prac-

tically an impossibility. The uses of the mast are obviously numerous, and builders and contractors will recognise how convenient a substitute this invention will be for scaffolding and invaluable in the erection of tall chimney construction. The main points are stability, strength and absolute simplicity.

The *Checkfire Door Co.*, of Silvertown, show on Stand No. 18, Row B, fireproof doors, which have passed the Fire Office Committee and meet the L.C.C. requirements. The thickness of the doors has been reduced to a minimum, but leaving a maximum of strength; by the reduction in thickness they certainly gain in appearance. Attached to one of the doors is their latest introduction of a patent panic bolt, which is so constructed as to be most simple and effective in action.

India rubber tiling was introduced by *The India Rubber, Gutta Percha and Telegraph Works Co., Ltd.*, over twenty years ago. Their stand in Row H, No. 163, reveals the handsome effects which can now be obtained. The large floor space includes sections of the new Silvertown Patent Mosaic, as well as various patterns of their ordinary rubber tiling, the whole being very imposing. Besides this flooring there are general rubber goods necessary in the building trade.

There is something very attractive about the arrangement of the stand occupied by *The Coalbrookdale Co., Ltd.*, in Row L, No. 240, for it suggests a commodious kitchen, with a smaller room on each side. The "K. B." range is shown in action with complete fittings, also the No. 4 "Thrift" range which, in a space of 3 feet to 3 feet 6 inches and a depth of 1 foot 6 inches, can give two ovens, and a high-pressure boiler amply sufficient for a small household.

The *Medway Safety Lift Co.* have installed an electric passenger lift under actual working conditions. It is operated by means of pushes in the car and on the landings, or alternatively by a switch fixed in the car for the attendant. The "S. M." patent controllers have several desirable features, not the least of which is that they are claimed to be absolutely fool-proof. A hand-power, self-sustaining dinner or service lift is also shown.

The stand of *The Patent Rapid Scaffold Tie Co., Ltd.*, in Row J, No. 203, should not be overlooked by any builder or contractor, for it shows something that would seem to have a big future. The steel tie is compact, easy of application, and has a minimum number of working parts. Messrs. Leslie & Co., the contractors, reported after exclusively using Scaffixer ties for the scaffolding at the Savoy Hotel extension, that they were so satisfied with their saving of time that they intended using them in other contracts. The same contractors employed them for the gigantic scaffolding at the new Money Order Office, Holloway, which has a frontage of 400 feet, and a height of 100 feet. The Scaffixer Tie may be obtained on hire if desired.

The *Sieewart Fireproof Floor Co.*, Thanet House, Strand, W.C., show their hollow concrete beams on Stand 21, Row B, in the Gallery. The Sieewart beams are made of a uniform width of 10 inches; in depth they range from 4 inches to 8½ inches, and they are made to span up to 20 feet without intermediate support. The size and reinforcement vary, of course, with the span and the load. The beams are sent to the job all ready, they are then placed on their supports close together, the narrow space in between each being grouted with cement, after which the floor is at once ready for use. The girders are generally provided with concrete haunchings upon which the beams are placed, and hooked stirrups are laid over the top flange to ensure continuity. This system obviously lends itself to great rapidity of construction and consequent saving in time and money. The advantages of hollow fire-resisting floors are generally admitted to be most substantial. The company are prepared to supply complete schemes and tenders on application.

At Stand 121, Row F, *Mr. F. H. Brook*, 11 Queen Victoria Street, E.C., the London agent of the Bursledon Brick Co., shows a variety of Bursledon bricks. These include their hard red wire-cut common bricks, which have been used for big contracts like Bordon Camp Barracks (3 millions), Southampton Dock extensions (1½ millions), Meon Valley Railway (11½ millions), and Amesbury Military Light Railway (2½ millions); also sand-faced hand-pressed red facings and Bursledon facings. Another feature of the stand is the wire-cut engineering and sewer bricks made by the Blishworth Brick and Tile Co., of which many millions have been used for the L.C.C. new main drainage works on account of their great strength and non-absorption. In addition to acting as agent for the above, Mr. F. H. Brook is agent for the Permanent Decorative Glass Co., Ltd., of Lancaster, and he shows their "Florite" opal tiling and "Stocal" patent

tiling. The latter consists of steel plates in brick or tile sizes having a dove-tail turned-in edge on all four sides, which gives a perfect grip, so that it cannot become detached from the wall. At the same time it does not take up more than $\frac{3}{8}$ -inch thickness. The surface can be enamelled to any colour from dull eggshell to bright majolica. It is especially recommended for reinforced concrete walls.

R. Gay & Co., Ltd., arouse a good deal of interest through their model roller mill and mixer as used for the manufacture of "Impenetrable" Paint. This latter is an odourless varnish paint which dries with a high gloss in from six to eight hours and renders the surface damp-proof. A cheaper brand than "Impenetrable" is their "Etruscan" paint. The "Tegoline" is a more expensive paint than these, and it is intended for high-class interior work.

Messrs. J. F. Phillips & Son, heating engineers, Westminster, show Barker's patent hydro-radiant heating system intended for small houses, which combines an open fire, closed stove and a hot-water boiler. The radiator is shaped in the manner of a dog-grate, and it is lined in the ordinary way with fire-bricks. The boiler is fixed at the back out of sight, and it can be connected to a hot-water supply apparatus or with radiators in any part of the house, thus making full use of the waste heat. The generator is closed when extra slow combustion is desired. The stove is made by the Falkirk Iron Co., which is of itself a guarantee of excellence. Another apparatus is Barker's patent low-pressure boiler feeder.

The Barnstone Blue Lias Lime Co., Ltd., show in the Gallery Vianex for binding macadam, Barnstone Portland cement, Barnstone blue lias ground and lump lime, and Murite for plastering. The Vianex can be used in any kind of weather, and is known to road surveyors as one of the simplest, cheapest and most expeditious in working of the many new binders at present being tried to produce a perfect road surface. By virtue of its ease of preparation, great covering capacity, strength and durability, it is claimed there is no better or cheaper material than Murite for plastering walls, ceilings and partitions of all kinds. For plastering on walls five parts of sand to one of Murite are used for the first coat and two parts of sand to one of Murite for the second or finishing coat.

Several interesting machines represent the *First Cottbus Cement Goods and Machine Works*. These include a brick machine with a guaranteed daily output of three thousand perfect bricks, a machine for making interlocking concrete roofing tiles, a concrete block machine, a hollow or plain partition slab maker, and a hand concrete mosaic tile press.

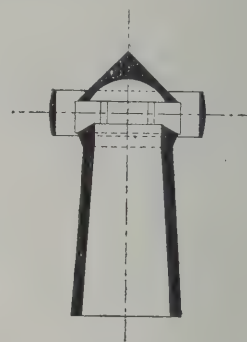
Of the many brick structures erected by exhibitors this year the stand of *D. & C. Rutter, Ltd.*, is conspicuous from the fact that hand-made yellow stocks are principally employed. This firm were established eighty years ago and claim to be the oldest stock brick makers in the trade. A guarantee is given that all brick earth used by them is washed and made to pass through an eighth of an inch mesh, and is weathered and tempered by exposing it for six months before it is made up. Yellow stocks are by no means the only kind of brick produced, for considerable variation in colour (including red facings) is to be found in the eight qualities. They also make partition blocks, flooring tiles, chimney-pots, ridge tiles, and flower-pots.

If there were many more stands like that of *Godfrey Giles & Co.*, Olympia would indeed be a sight to attract all the town. The exhibit consists of a circular Georgian pavilion in fibrous plaster and compo with the interior charmingly arranged as a dining-room or lounge. The firm are specialists in this kind of interior decorative work and they have here utilised their space to most excellent purpose.

Vulcanite, Ltd., have erected a wooden stand roofed with patent Vulcanite roofing. This consists of several layers of sheet asphalt combined with liquid Vulcanite composition applied in a hot state so as to render the whole surface into a waterproof and fire-resisting jointless sheet. It is chiefly employed for covering flat roofs and for roof tanks. The latter use is illustrated by a small tank on the stand. The Company also show others of their specialities, including Vulcanite sheet asphaltes, Leatherite Felts, Rexitite (pure bitumen) roofing and dampcourse, and Bituna dampcourse.

Unluckily *John Davidge & Co.*, 6 Holborn Viaduct, E.C., were too late in their application to be included in the catalogue. At Stand 6, Row B, they are showing their new Georgian "Nosmoke" down-draught preventing chimney-pot and ventilator. The section we here give of it will help to explain the principle of the patent. The head of the pot consists of two cones placed one above the other surrounded by a wind-guard at a distance of about two inches. The

theory is that a descending current striking down on the cover is deflected outwards and downwards between the pipe and the wind-guard past the outlet, thereby inducing an upward current in the pipe. An upward current passes



between the pipe and the wind-guard inducing a similar up-draught, while a horizontal current draws the smoke out of the pipe on the lee-side. The pot may be obtained in galvanised iron and fitted to any existing pot by means of clips, or it may be had in stoneware. The nominal height is twenty-four inches for any of the various patterns. There are no moving parts to get out of order and it is easily swept. It is claimed for them that they will work anywhere and in any position.

Mander Bros., Wolverhampton, hold a royal warrant of appointment as manufacturers to King George V., which comes as a worthy climax to a century of existence. The firm are makers of varnish, paints, and enamels. On the stand are examples of their many kinds of varnishes, of Flexolin white enamel, of the ten shades of Suffield green, of Olsina water paints (made in 100 shades), of Matsine permanent stain for woodwork, and of other specialities.

Japanol Enamel Co., Culford Works, N., sell a material equally suited for both inside and outside work whether on buildings, yachts, or for general painting where a brilliant, non-fading, washable surface is desired on wood, metal, stone, plaster, &c. Japanol resists the weather even under most searching conditions. It is conspicuous for its spreading and covering properties, one gallon covering between 70 and 80 square yards on properly prepared work. The best ground-work is said to be hard-flattening, or ordinary lead or zinc paint may be used so long as they contain very little oil. The enamel is in 36 stock tints. Other products of the Company are Japanol Flat and Japanol bath enamel.

"*Solita*" *Cement Waterproofing Co.*, Swansea, show, of course, their dry powder for waterproofing cement named "Solita" and "Muranda" water-paint. Their waterproofing compound is sprinkled over the cement in the requisite proportion, and then the whole is turned over repeatedly with a shovel until no trace of the Solita is visible. The sand and water are then added. The War Office, India Office, and Office of Works have all tried and approved of the compound as a damp-resister. "Muranda" can be used for new walls; it can be painted on or varnished, and is both lime-resisting and washable.

The (U.K.) Winget Concrete Machine Co., Ltd., Newcastle-on-Tyne, show at Stand 187, Row J, a Winget concrete block-making machine, a partition slab-making machine, and an "Express" concrete mixer. One feature of the "Winget" block-making machine is its versatility, for it will make blocks of all lengths, from 4 inches to 32 inches, all widths between $2\frac{3}{8}$ inches and 16 inches, and all heights from 2 inches to 9 inches. The same machine will make three partition slabs at one operation, curved blocks, solid or hollow blocks, four blocks at one operation, pier blocks, and other shapes; all of these may have any desired pattern of finish, either chiselled or carved face. Nowadays speed is of such importance that it is important to know that Messrs. Macalpine, the contractors, have turned out over 500 of the 32 x 16 x 9 blocks on one machine in ten hours. This number is, of course, phenomenal, but the company guarantee an output of from two to three hundred a day. "The Express" batch concrete mixer is also put into operation on the stand. This machine consists of a pan 6 feet 6 inches in diameter and 1 foot 3 inches deep. To the central capstan are attached revolving arms, fitted with adjustable plough-shaped beaters and iron rakes. After the cement and aggregate have been mixed dry in the pan for about fifteen seconds, water is supplied from a circular overhead spray-pipe. The mixing is continued for a further 25 seconds, and then the thoroughly-mixed concrete is drawn off by a sliding door.

THE
Architect and Contract Reporter.

FRIDAY, MAY 12, 1911

Published weekly, subscription 19s. per annum for Great Britain, and for Colonial and Foreign subscriptions £1 6s. 6d. All business communications to the Managing Director,

P. A. GILBERT WOOD,

Publishing Offices, 6-11 Imperial Buildings, Ludgate Circus, London, England.

Telephone No. 4725 Holborn.

Branch Offices at 43 OLD QUEEN STREET, S.W., Messrs. W. HAY FIELDING & CO. being the representatives for all business purposes.

The Birmingham Offices are at 102 COLMORE ROW.

. Entered in the United States of America as second-class matter.

AGENTS FOR AMERICA:

The International News Co., 5 Bream's Buildings, Chancery Lane, London, England, and New York.

AGENTS FOR CANADA:

Messrs. WM. DAWSON & SONS, Ltd., 91 Church Street, Toronto, to whom all correspondence for Subscription and Advertising Rates should be made.

Subscription \$5.20.

AGENTS FOR AUSTRALIA, NEW ZEALAND AND TASMANIA:

Messrs. GORDON & GOTCH, Melbourne, Sydney, Brisbane, and Perth, Australia; Wellington, Christchurch, and Auckland, New Zealand; Launceston and Hobart, Tasmania.

SOUTH AFRICA: Central News Agency, Ltd.

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Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

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EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit the insertion of lengthy communications.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

. As great disappointment is frequently expressed at the nonappearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

ATHENS.—Sept. 25.—An international competition of plans is invited by the Greek Ministry of the Interior (Public Works) for the erection of a Court of Justice at Athens. The cost of the building must not exceed 160,000l. A first prize of 800l., and a second prize of 320l. will be awarded. The Greek Official Gazette, containing particulars (in Greek and in French) may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

BRADFORD.—June 1.—The Board of Management of the Bradford Infirmary invite plans with estimates for a new infirmary in Duckworth Lane. Mr. Keith D. Young, F.R.I.B.A., will act as assessor. Deposit 3l. 3s., which will be refunded on receipt of a bona-fide design or if block plan, instructions, &c., are returned within a month after receipt of replies to competitors' questions. The Secretary Superintendent of the Royal Infirmary, Bradford. (For further particulars see advertisement, January 13.)

BURSTOW.—May 26.—The Trustees of Archbishop Abbott's School, Guildford, invite designs and estimates for erection of a pair of semi-detached labourers' cottages on the Rookery Farm, Burstow, Surrey, to contain a living room, a scullery, and three bed-rooms, and to be provided with a water supply and the usual offices and outbuildings. Mr. H. P. Smallpeice, clerk, 138 High Street, Guildford.

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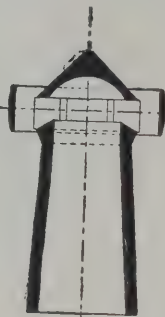
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CHESTERFIELD.—May 15.—The Standing Joint Committee for Derbyshire invite architects practising in the county to submit designs for a Court-house and lock-up to cost 8,000l. Mr. F. Baggallay, F.R.I.B.A., will act as assessor. Deposit 3l. 3s. Apply to Mr. G. C. Copstick, F.R.I.B.A., County Offices, Derby.

NORTHAMPTON.—July 7.—The Borough Education Committee invite architects practising in the borough or county of Northampton to submit on the 7th July plans for a secondary school for girls, to be erected in St. George's Avenue. A plan of the site and a copy of the instructions containing the terms and conditions of the competition may be obtained from Mr. Stewart Beattie, Secretary, Education Offices, 4 St. Giles's Street, Northampton.

NORWICH.—June 2.—The Royal Agricultural Society offer prizes for plans of house and buildings containing accommodation suitable for a mixed farm not exceeding 50 acres in extent: First prize, 25l.; second prize, 15l.; third prize, 10l.; fourth prize, 5l., for the Royal Agricultural Society of England Show at Norwich, June 26 to 30. Entries close June 2. Mr. T. McRow, Secretary, 16 Bedford Square, London, W.C.

WHITLEY BAY.—June 7.—The Whitley and Monk-eaton Urban District Council invite architects practising in Northumberland and the city of Newcastle-upon-Tyne to submit designs for the proposed cemetery buildings. A professional assessor has been nominated by the President of the R.I.B.A. to assist in drawing up the conditions and to advise on the relative merits of the various designs. The site-plan and the conditions can be obtained on a written application being made, accompanied by a deposit of 1l. 1s., which will be returned to every competitor submitting a bona-fide design. The designs, addressed to the Surveyor, are to be delivered at the Council Offices, Whitley Bay, on or before June 7. Apply to Mr. Augustus Whitehorn, Clerk to the Council, 60 Laville Street, North Shields.

WALES.—June 16.—The Cymmer Co-operative Society, Ltd., invite competitive designs for rebuilding business premises at Cymmer, Port Talbot. Deposit 5s. Premiums of 5l. and 5l. will be awarded to plans first and second in order of merit respectively. The Secretary, Co-operative Society, Cymmer, Port Talbot, Glamorgan.

CONTRACTS OPEN.

ALTHORPE.—May 20.—For alterations and additions to White House, Althorpe, near Doncaster. Mr. J. W. Ross, Melton, Doncaster.

ALTRINCHAM.—May 17.—For erection of 32 semi-detached cottages and six blocks of cottage flats on the estate, Moss Lane, Altrincham, for the Urban District Council. The work will be let in two contracts, viz., cottages and cottage flats. Deposit 1l. 1s. Mr. E. W. Hilton, architect, Mossburn Buildings, Stamford New Road, Altrincham.

BANSTEAD.—May 24.—For the extension of school classrooms at their school, Banstead, Surrey, for the Managers of the Kensington and Chelsea School District. Deposit 5l. Mr. C. A. Sharp, architect, 2 Verulam Buildings, Gray's Inn, W.C.

BARNSELEY.—May 15.—For the erection of the Millstone Hotel, Peel Street. Forward names on or before May 15 to Mr. E. W. Dyson, architect, 10 Regent Street, Barnsley.

BARROW-IN-FURNESS.—May 17.—For erection and completion of meter, exhaustor, and purifier houses at the gas-works. Mr. L. Hewlett, Town Clerk, Town Hall, Barrow-in-Furness.

BILLINGE.—For erection of club premises at Billinge, Lancs. The Hon. Secretary, the Billinge Conservative Club Co., Ltd., 44 Main Street; or at Newton Road, Billinge, near Wigan.

BOURNE.—For the erection of eight cottages (in pairs) at Lippingle, for the Bourne Rural District Council. The Surveyor's Office, West Street, Bourne, Lincs.

BRADFORD.—May 15.—For the re-construction of the conveniences at the Thackley School. The City Architect, Town Hall, Bradford.

BUCKIE.—May 17.—For mason, carpenter, slater, plumber, plasterer, and painter work of business premises and house, proposed to be erected in East Church Street, Buckie, for Mr. T. M. Jack. Mr. G. Macpherson, architect, Buckie.

BURY.—For alterations and additions to workhouse. Send 1 name and 2l. deposit to Mr. A. Hopkinson, architect, 5 Agur Street, Bury, Lancs.

CAMBRIDGE.—May 17.—For the alteration of the doorway of the fire station, St. Andrew's Street. The Borough Surveyor, Guildhall, Cambridge.

CARDIFF.—May 16.—For erection of the Laundrywork Centre at Grangetown Council Schools. The City Engineer's Office, City Hall, Cardiff.

CARTMELL FELL.—May 15.—For the restoration of St. Anthony's Church, Cartmell Fell, Lancs. Mr. J. F. Curwen, F.R.I.B.A., F.S.A., 26 Highgate, Kendal.

CHARTHAM.—May 19.—For certain works of repairs, plastering, painting, &c., to Ward C (female), at the County Lunatic Asylum, Chartham Downs, near Canterbury. Deposit 5l. Mr. W. J. Jennings, architect, 4 St. Margaret's Street, Canterbury.

CHELMSFORD.—May 16.—For alterations and additions to the Friars Council school. Deposit 1l. Mr. W. H. Pertwee, architect, Chelmsford.

CONSETT (DURHAM).—May 16.—For five new shops, entertainment hall, &c., proposed to be erected at Middle Street. Mr. J. J. Eltringham, architect and surveyor, Derwent Street, Blackhill.

DALTON.—May 15.—For erection of two dwelling-houses off Wakefield Road, Dalton, Huddersfield. Mr. J. Berry, architect and surveyor, 3 Market Place, Huddersfield.

DERBY.—May 15.—For erection of new mill on site of old silk mill, for the Corporation. Deposit 1l. 1s. Mr. J. Ward, M.I.C.E., Borough Surveyor, Babington Lane, Derby.

DROYLSDEN.—May 17.—For erection of an elementary school for 810 children in Fairfield Road, Droylsden, Lancashire. Deposit 2l. Mr. H. Littler, county architect, 16 Ribblesdale Place, Preston.

DUNDALK.—May 16.—For clearing site and erecting two houses in Barrack Street, Dundalk, for Messrs. Macardle, Moore & Co., Ltd. Mr. J. F. M'Gahon, architect, 9 Exchange Buildings, Dundalk.

EARBY.—For the several works required in erection of two semi-detached houses on the Grange Estate, Earby, Yorks. Forward names to Messrs. Empsall & Clarkson, architects and surveyors, The Exchange, Bradford.

FORMBY.—May 17.—For the construction of a road, bridge, station buildings, &c., at Formby, for the Lancashire and Yorkshire Railway Co. The Engineer's Office, Hunt's Bank, Manchester.

GLASGOW.—May 31.—Constructional schemes and tenders are invited for the erection of the reinforced concrete floors, roofs, beams, columns, staircases, &c., in connection with the extension of Glasgow head post office. Any system or systems of construction may be adopted for the whole or any part of the work. Deposit 3l. 3s. H.M. Office of Works, 3 Parliament Square, Edinburgh, or at H.M. Office of Works, G.P.O., Glasgow.

HALIFAX.—May 17.—For the works required in extensions to St. Mary's School, Rhodes Street. Messrs. Hinchliffe & Co., architects and surveyors, Tower Chambers, Halifax.

HALIFAX.—May 19.—For the works necessary in the erection of a detached residence and appurtenances at Skircoat. Mr. T. Kershaw, A.R.I.B.A., architect, 26 George Street, Halifax.

HALIFAX.—May 20.—For the various trades in alterations of Pellon Lane Mills, for Martin, Sons & Co., Ltd. Messrs. C. F. L. Horsfall & Son, architects, Lord Street Chambers, Halifax.

HEBDEN BRIDGE.—May 19.—For the various works required in erection of two semi-detached houses, Lee Mill Road. Messrs. Sutcliffe & Sutcliffe, F.S.I., architects, New Road, Hebdon Bridge.

HEMINGBROUGH.—May 20.—For the restoration of the church porch. The Vicar, Hemingbrough, Howden, Yorks.

HETHERSETT.—May 20.—For erection of eight cottages in the parish of Hethersett, Norfolk, for the Henstead Rural District Council. Deposit 1l. 1s. Mr. J. B. Panks, Framingham Pigot, Norwich.

HORRABRIDGE.—May 17.—For erection of semi-detached houses near Horrabridge Station, Devon. Mr. E. W. Lister, architect and surveyor, Clock Tower Chambers, Plymouth.

HUDDERSFIELD.—May 17.—For erection of two dwelling-houses at Hall Bower. Mr. J. Berry, architect and surveyor, 3 Market Place, Huddersfield.

HUDDERSFIELD.—May 18.—For the following works in connection with the erection of covered football stand, area 8,000 square feet, for the Huddersfield Cricket and Athletic Club, viz.: (1) Steelwork and corrugated roof; (2) joiner (wood roof and framing); (3) plumbing and glazing; (4) mason; and (5) painter. Mr. R. W. Yates, architect, 32 John William Street, Huddersfield.

HULL.—May 24.—For the builder's and ferro-concrete work required in the extensions of the electricity works at Sculcoates Lane and in the sub-station in New George Street. Mr. A. E. White, M.I.C.E., city engineer, Town Hall, Hull. Send 1*l.* deposit to Mr. T. G. Milner, city treasurer.

IRELAND.—May 18.—For repairs and alterations to stores on Sligo Quay. Messrs. Chute & Fowler, civil engineers, Sligo.

IRELAND.—May 22.—For carrying out the re-building of Greenmount House, Antrim, and other additions and alterations to the farm buildings, for the Antrim County Committee of Agriculture. Deposit 1*l.* 1*s.* Mr. A. B. Clarke, sec. to the County Committee, County Courthouse, Belfast, or Messrs. W. H. Stephens & Sons, surveyors, 13 Donegall Square North, Belfast.

JERSEY.—May 31.—For the construction of a parish hall in the parish of St. John. Mr. C. G. Bowles, M.S.A., architect, Halkett Place, St. John.

KEIGHLEY.—May 15.—For constructing subways and erecting bath-rooms at the Union Workhouse. Messrs. Moore & Crabtree, architects, York Chambers, Keighley.

KENDAL.—May 16.—For constructing sick wards at the Workhouse. Mr. Stephen Shaw, F.R.I.B.A., architect, Kendal.

KIDDERMINSTER.—May 23.—For the enlargement of Kidderminster head post office. Deposit 1*l.* 1*s.* The Postmaster, Kidderminster, and H.M. Office of Works, Storey's Gate, London, S.W.

LEADGATE (DURHAM).—May 23.—For extensions at Leadgate Council School, Durham. Mr. G. T. Wilson, architect, Blackhill.

LEAMINGTON.—May 20.—For alteration of premises at Leamington and known as 9 Waterloo Place and 9 Clarendon Place, to fit the same for the requirements of the Warwickshire Royal Horse Artillery, for the Territorial Force Association. Mr. F. P. Trepess, architect, Church Street, Warwick.

LEEDS.—May 18.—For erection of one hostel for women students at the City of Leeds Training College, Beckett's Park, Headingley. Send 2*l.* 2*s.* deposit and names at once to Mr. James Graham, Secretary for Education, Education Department, Calverley Street, Leeds. Mr. G. W. Atkinson, architect, 1 Mark Lane, Leeds.

LIVERPOOL.—May 13.—For alterations and additions to the Parish Offices, 15 High Park Street. Deposit 3*l.* 3*s.* Send in names and addresses by May 13 to Mr. W. W. Thomas, M.S.A., architect and surveyor, 15 Lord Street, Liverpool.

LONDON.—May 13.—For erection of two permanent schools, viz., Culvert Road School, to accommodate 1,520 children, and Risley Avenue School (L.C.C. Estate, Lordship Lane), to accommodate 1,894 children, for the Tottenham Education Committee. Application for quantities, accompanied by 2*l.* 2*s.* deposit, to be made by May 13 to the architect, Mr. G. E. T. Laurence, A.R.I.B.A., 22 Buckingham Street, Adelphi, W.C.

LYNG.—May 20.—For the restoration of Lyng Church, Norfolk. Deposit 1*l.* 1*s.* Rev. H. R. Fleming, Lyng Rectory, Norwich.

MARSH.—May 19.—For the various works required in erection of two villas, Thornhill Road, Marsh, Huddersfield. Messrs. Lunn & Kaye, architects and surveyors, Huddersfield and Milnsbridge.

MYTHOLMROYD.—May 19.—For the various works required in erection of a villa on the Hawksclough Estate, Mytholmroyd, Yorks. Messrs. Sutcliffe & Sutcliffe, F.S.I., architects, New Road, Hebden Bridge.

NORTH ELMSALL.—May 17.—For erection of six cottages, &c., at Wrangbrook Lane, for the Hull and Barnsley Railway Company. Deposit 1*l.* 1*s.* The Engineer, 9 Charlotte Street, Hull.

NORTHOWRAM.—May 17.—For the whole or any trades required in erection of a church at Northowram, near Halifax. Send names with references, together with a deposit of 1*l.* 1*s.*, to Messrs. Joseph F. Walsh, F.S.I., & Graham Nicholas, F.R.I.B.A., 10 Harrison Road, Halifax.

NUNEATON.—May 15.—For erection of iron and steel balconies for consumptives at the infirmary, for the Guardians. Deposit 1*l.* 1*s.* Mr. F. W. Allen, master at the Nuneaton Workhouse.

OTFORD.—May 24.—For the following works at the Isolation Hospital: (1) Constructing a cart-shed; (2) constructing a small lean-to greenhouse. Mr. E. Pawley, 86 High Street, Sevenoaks.

PEMBURY.—May 22.—For the execution of improvements at the Pembury Council School. Mr. A. T. Simpson, correspondent, 23 Church Road, Tunbridge Wells, Kent.

REDRUTH.—May 15.—For erection and completion of two houses at Rose Row. Mr. Sampson Hill, architect, Green Lane, Redruth.

ST. AUSTELL.—May 17.—For alterations and additions to the St. Austell Police Station, Cornwall. Mr. A. E. Brookes, county surveyor, Truro.

ST. AUSTELL.—May 20.—For erection of a dwelling-house in Trewoon Road. Mr. H. Hodge, Trevarrick, St. Austell, Cornwall.

SADDLEWORTH.—May 19.—For the following works Greenfield new school, Saddleworth, for the West Riding Education Committee, viz.: Builder, joiner, slater, plumber, plasterer, painter, ironfounder and smith, and heating engineer—whole or separate tenders. The Education Architect, County Hall, Wakefield, or the Divisional Clerk, 8 Cloth Hall Street, Huddersfield. Send 1*l.* 1*s.* deposit to the West Riding Treasurer, County Hall, Wakefield.

SANDHURST.—May 29.—For the erection of No. 48 "b" married soldiers' quarters at the Royal Military College Sandhurst. Send names and 10*s.* deposit by May 19 to the Director of Barrack Construction, 80 Pall Mall, London S.W.

SCOTLAND.—May 20.—For the mason, carpenter, slater, plaster, plumber, and painter works of cottages to be erected at Bruntland, Roseisle. Mr. J. Wittet, architect, Elgin.

SHILLINGTON.—May 20.—For erection of a memorial hall at Shillington, Beds. Mr. J. Shilcock, architect, Hitchin.

SHIPTON BELLINGER.—May 16.—For erection of a Council school for 99 children and teacher's house at Shipton Bellinger, Hants. Deposit 2*l.* 2*s.* Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

SLAITHWAITE.—May 15.—For the various works required in erection of a house, stable, &c., in Meal Hill Lane. Mr. A. Shaw, architect, Golcar, Yorks.

SOUTH HORNCURCH.—May 15.—For additions to Council school at South Horncurch, Essex. Send names, with a cheque for 2*l.* 2*s.* to Mr. A. S. R. Ley, architect, 214 Bishopsgate, London, E.C.

SUNDERLAND.—May 25.—For proposed cloak-room extension, &c., at Hylton Road Schools. The Borough Surveyor's Office, Town Hall.

TODMORDEN.—May 15.—For the various works required in alterations to cottages, Calder Street. Mr. T. H. Mitchell, architect, Water Street, Todmorden.

TODMORDEN.—May 20.—For the various works required in erection of boiler house at the Workhouse. Mr. T. H. Mitchell, architect, Water Street, Todmorden.

USHAW MOOR.—May 15.—For erection of a hall and billiard room, also excavation of a cellar, at the Albion House Club, Ushaw Moor, Durham. Mr. Frankland Smith, architect, Meadowfield, Durham.

WALES.—May 15.—For building a residence at Laleston, near Bridgend. Deposit 2*l.* 2*s.* Messrs. Cook & Edwards, M.M.S.A., Masonic Buildings, Bridgend.

WALES.—May 15.—For rebuilding Providence Congregational Church, Mountain Ash. Mr. T. W. Miller, M.S.A., architect and surveyor, Mountain Ash.

WALES.—May 16.—For erection of a schoolroom at Thomastown, near Tonyrefail, for the Welsh Baptist denomination. Mr. P. J. Jones, architect, Church Street, Pontypridd.

WALES.—May 16.—For erection of the Monmouthshire County Training College, principal's residence and lodge at Caerleon, near Newport, Mon. Deposit 3*l.* 3*s.* Messrs. Alfred Swash & Son, F.R.I.B.A., Midland Bank Chambers, Newport.

WALES.—May 18.—For erection of a drill hall at Towyn for the Merionethshire Territorial Force Association. Deposit 1*l.* 1*s.* Mr. R. W. Davies, M.S.A., architect and surveyor, Carno, Mont.

WALES.—May 18.—For building a chancel, organ chamber, and vestry at Gyfeillon Church, near Pontypridd. Deposit 2*l.* 2*s.* Mr. E. M. Bruce Vaughan, F.R.I.B.A., architect, Cardiff.

WALES.—May 20.—For erection of the proposed Station Hotel at Ynysddu, Mon. Deposit 1*l.* 1*s.* Mr. W. A. Griffiths, architect, Pontllanfraith, Mon.

WALES.—May 20.—For erection of 52 houses at Pentrebach, near Merthyr Tydfil, together with the construction of streets, lanes, sewers, &c., for the Corporation. Deposit 2*l.* 2*s.* The Borough Engineer, Merthyr Tydfil.

WALES.—May 23.—For erection of a goods shed at Llanhilleth, Mon., for the Great Western Railway Co., The Engineer at Newport Station.

WALES.—May 24.—For erection of 20 houses in Abercarn, for the Gwyddon Road Building Club No. 2. Mr. R. L. Roberts, architect, Abercarn.

WEST HAM.—May 23.—For the following works, for the Town Council, viz.: (1) Erection of Fire Brigade quarters, Stratford; (2) street works, Mill Road, Silvertown. Deposit 1l. each contract. Mr. J. G. Morley, Borough Engineer, Town Hall, West Ham.

TENDERS.

BEDLINGTON.

For renovation and additions at Bedlington Church, Northumberland. Mr. A. B. PLUMMER, F.R.I.B.A., diocesan architect, Newcastle-on-Tyne.

Carse & Son	£2,687	0	1
R. & C. BROWN, Amble (accepted)	2,666	10	11

COSBY.

For erection of a new elementary school and handicraft centre at Cosby, Leics., together with out-offices, drainage, and other works connected therewith. Mr. E. G. FOWLER, architect, Leicester.

School.

Barker & Sons	£2,040	0	0
Bowles & Son	1,863	0	0
Harding	1,740	0	0
Chapman	1,710	0	0
Faulks	1,690	0	0
Southam	1,675	6	0
Corah & Son	1,660	0	0
Kellett & Son	1,650	0	0
Sleath	1,610	12	9
Fox	1,589	17	0
Bradford	1,543	0	0
Potter	1,539	10	9
OLDERSHAW, South Wigston (accepted)	1,524	17	0

Centre.

OLDERSHAW (accepted)	322	11	0
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FAVERSHAM.

For the following works in connection with a scheme of sewerage and sewage disposal, viz.:—Contract No. 5, which comprises the construction of a sewage pumping station and screen house, and other incidental works. Mr. S. PERCY ANDREWS, engineer, Faversham.

Underwood & Bro.	£10,315	16	7
Pedrette	9,993	4	7
Moss	8,589	0	0
Paramors, Ltd.	8,507	0	0
Wright & Co.	8,421	4	6
Cliff Ford	8,180	0	0
Bell & Sons	8,022	0	0
Ingleton	7,784	13	8
Kemp Bros.	7,599	0	0
PETHICK BROS., Plymouth, and 120 Victoria Street, S.W. (recommended)	7,489	0	0

FINCHLEY.

For the construction of sewers and 48-in. concrete culvert in Clevedon Avenue, and road-making in Fenstanton Avenue. Messrs. CHARLES SPARROW & SON, surveyors, Finchley.

Batchelor & Sons	£3,114	0	0
Swaker	3,051	0	0
Ballard	2,947	0	0
Adams	2,802	0	0
Brummell	2,680	0	0
Gibbons	2,563	0	0
Bell & Sons	2,466	0	0
Farrow	2,275	6	0

IMMINGHAM.

For the construction of a police station and a pair of cottages at Immingham, Lincs. Mr. JAMES THROPP, county surveyor, Lincoln.

S. & R. Horton & Sons	£4,686	15	0
Halkes Bros.	4,518	5	7
Gilbert	4,287	0	0
Turner & Sons	4,252	0	0
Thompson & Sons, Ltd.	4,200	0	0
Hewins & Goodhand	4,125	0	0
Longden & Son	4,082	6	3
Pettifer & Stainton	4,036	10	5
THOMPSON, Scunthorpe (accepted)	3,998	0	0

LONDON.

For additions and alterations at the Receiving Workhouse and Casual Wards, Sheffield Street, Lincoln's Inn Fields, W.C., for the Guardians of the Strand Union. Mr. A. A. KERWICK, M.S.A., architect, 12 Norfolk Street, Strand.

A. Monk	£1,890	0	0
Todd & Newman	1,850	0	0
Building Construction Co.	1,774	0	0
McCormick & Sons	1,772	0	0
Coles	1,750	0	0
Paddle	1,737	0	0
Minter	1,737	0	0
Mills & Sons	1,695	0	0
Lowe & Co.	1,669	0	0
Smith & Sons	1,647	0	0
Johnson & Co.	1,630	0	0
Wall	1,619	0	0
Mattock & Parsons	1,595	0	0
Reason	1,498	0	0
Sabey & Sons	1,488	0	0
Brown	1,480	18	0
McLAUGHLIN & HARVEY, LTD., 13 Brecknock Road, N.W. (provisionally accepted)	1,449	0	0

MALDON.

For erection of six cottages in the parish of Tolleshunt D'Arcy, Essex, for the Maldon Rural District Council. Mr. W. ALMOND, surveyor, Malden.

F. & S. Cooper	£1,347	3	3
Rayner	1,189	10	0
Spalding & Sons	1,150	0	0
Reynolds	1,140	0	0
Ward & Son	1,135	0	0
Hutton & Son	1,050	0	0
Gurton	1,042	15	6

NEWARK.

For erection of buildings at the Isolation Hospital, Barnby Road.

Harper	£2,580	0	0
Pilliat	2,520	11	8
Short	2,485	0	0
Clarke	2,434	0	0
Brown & Son	2,428	0	0
Smith (recommended for acceptance)	2,243	10	0

ST. ALBANS.

For the erection of St. Paul's Vicarage. Messrs. J. E. K. & J. P. CURRS, architects, 14 Southampton Street, W.C.

Blow & Peters	£2,092	13	2
Skelton	2,063	2	6
Redhouse & Son	2,022	0	0
L. & W. Whitehead	2,020	0	0
J. & M. Patrick	1,961	0	0
Honour & Son	1,960	0	0
Fitch & Cox	1,920	0	0
Salisbury & Son	1,920	0	0
Bailey & Sons	1,914	17	9
Hacksley Bros.	1,896	0	0
Sharp	1,890	0	0
Roberts	1,886	0	0
Monk	1,880	0	0
Hinkins & Sons	1,870	0	0
Somerford & Son	1,869	0	0
Vail & Shore	1,860	0	0
Bushell	1,856	9	6
Clark	1,840	0	0
Miskin & Sons	1,834	0	0
Love & Co.	1,829	0	0
Pitkin	1,820	0	0
Clark Bros.	1,799	0	0
Dunham	1,796	0	0
Brown & Sons	1,790	0	0
GIBSON & Co., Finchley (accepted)	1,750	0	0

SCOTLAND.

For extension and completion of elementary school, Burntisland, for the School Board.

Accepted tenders.

Currie, Edinburgh, joiner	£1,040	0	0
Balfour & Co., Kirkcaldy, masons	837	0	0
Dover & Rose, plumbers	201	6	6
Meikle & Philip, Edinburgh, heating	187	0	0
Williamson & Son, plasterers	135	0	0
W. Olgivie, iron and smith work	91	12	0
Anderson, slater	80	0	2

WALES.

For erection of Pengam Fair View Council school, for the Monmouthshire County Education Committee.

Herbert & Co.	£9,150	0	0
Davies	7,852	0	0
James	7,793	0	0
Bond	7,692	0	0
Jenkins	7,540	0	0
Bailey Bros.	7,479	0	0
Leadbeter	7,430	0	0
Evans & Bros.	7,395	0	0
Davies & Sons	7,378	0	0
Williams & Sons	7,248	0	0
Moon	7,137	0	0
Jones	7,123	0	0
COLBORNE, Swindon (accepted)	7,099	0	0

WATFORD.

For proposed domestic economy centre at Watford, for the Hertfordshire County Council. Mr. U. A. SMITH, M.I.C.E., County Surveyor, Hatfield.

C. Wall	£2,614	0	0
Nightingale	2,550	0	0
Trudgett	2,400	0	0
Chessum & Son	2,389	0	0
Marsland & Son	2,334	0	0
Higgs & Hill	2,334	0	0
Clifford & Gough	2,299	0	0
Honour & Son	2,241	0	0
J. & M. Patrick	2,202	0	0
Faulks	2,164	13	8
Eames	2,163	0	0
Fryd	2,144	0	0
F. & G. Foster	2,140	0	0
Brightman & Son	2,127	0	0
Ensor & Ward	2,126	0	0
Wigg & Son	2,087	0	0
Hunt & Son	2,056	0	0
Jaggard	2,021	0	0
CLARK BROS., Watford (accepted)	1,979	0	0

LONDON.

For the extension of the Stationers' Company's School at Hornsey. Mr. H. G. CROTHALL, architect to the Governors, 30 Broadway, Westminster, S.W.

Parnell & Son	£7,906	0	0
Porter	7,438	0	0
Brand, Pettit & Co.	7,286	0	0
Neal	7,269	0	0
W. Lawrence & Son	7,262	0	0
Rice & Son	7,175	0	0
E. Lawrance & Son	7,097	0	0
Monk	7,070	0	0
Treasure & Son	7,000	0	0
Fairhead & Son	6,984	0	0
Knight & Son	6,971	0	0
Mattock Bros.	6,877	0	0
Lacey	6,850	0	0
Stewart (recommended)	6,693	0	0

WHITCHURCH.

For the erection of a fire-station and offices. Mr. C. H. KEMPTHORNE, architect, Cardiff.

Tomkinson	£1,089	0	0
Knox & Wells	1,047	0	0
Griffiths & Son	1,040	0	0
Gummer	1,009	5	0
Thomas & Co.	1,000	0	0
Evans & Bros.	998	0	0
Gibbey & Cleak	995	0	0
Davies & Sons	985	0	0
Rendell	979	0	0
Stephens	970	0	0
Hanson	922	7	6
Williams	919	0	0
Parsons	915	19	3
Vickery Bros.	890	0	0
Haines	889	0	0
Bryan	879	17	6

WHORLTON.

For addition of chancel and vestries, &c., at Whorlton Church, Northumberland. Mr. A. B. PLUMMER, F.R.I.B.A., diocesan architect, Newcastle-on-Tyne.

Carse & Son	£1,914	3	9
CRADON & SON, Durham (accepted)	1,884	2	9

THE BUILDING TRADES EXHIBITION.

THE Building Exhibition of 1911 was remarkable for the costly manner in which many of the exhibitors fitted up their stands, which is evidence that experience has shown the value of these exhibitions to those engaged in supplying building material. This wise expenditure naturally acted as an attraction to visitors, and the number of these on the latter two Saturdays was almost too great for comfort, though undoubtedly good for business. From the visitor's point of view the show was admirable, and we may say the best that has been given. There was plenty to see and pleasure in the seeing, which was enhanced by an absence of objectionable touting and a readiness on the part of exhibitors to give courteous attention to all inquirers. In these respects the exhibition of 1911 was far in advance of some in the more distant past. The general tone of the exhibition was, in fact, of a very high order, and we believe that many of the exhibitors are very well satisfied with the results of their enterprise. There is no doubt that the man who wishes to see good results from advertising must do it well and thoroughly. He who spends niggardly wastes his money; 100l. brings a return, 1,000l. a handsome return, whilst the bold enterprise of an expenditure of 10,000l. makes a fortune. This principle has evidently been recognised by the exhibitors at the Building Exhibition just closed.

Messrs. S. E. Collier, Ltd., Reading, were one of the firms who made a special show of reproductions of the old English brick. It is unnecessary to mention that English brickwork is considered of peculiar charm with its refinement, mellow colour, wide jointing, and general high workmanship. Messrs. Collier exhibited an assortment of their bricks, several kinds of roofing tiles, ridges, chimney-pots, terra-cotta and art pottery.

Messrs. Robert W. Blackwell & Co., Ltd., exemplified the uses of "Genasco" Trinidad Lake asphalt for roofing, dampcourse, and underslating, and the "Genasco" waterproof paints, which they specially manufacture in five colours for painting their roofing, and which is also used on iron roofs, &c. One square of "Genasco Ready Roofing" will cover 100 square feet net, as each roll contains an allowance for the necessary 2-inch laps. There were also on the stand samples of Blackwell's white-glazed bricks.

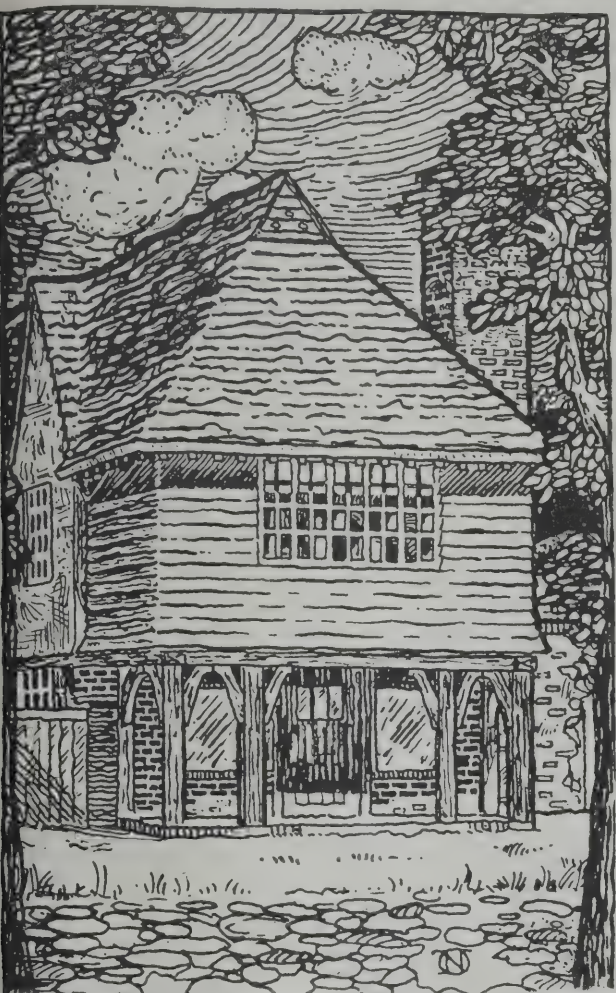
Messrs. Hubert Todd & Co. suggested up in the gallery the architectural possibilities of granite concrete by exhibiting a simple Renaissance doorway and a sun-dial made in that material from the designs of Mr. J. Cash, F.R.I.B.A. A more obvious and more general use for granite concrete was exemplified in the paving in red, buff, and grey. When occasion demands, the concrete can be strengthened by reinforcement, and in this class of work Hubert Todd & Co., 53 Victoria Street, S.W., have specialised.

Newland's "Double-flush" water-waste preventer was put on the market less than a year ago and has met with a most favourable reception. It was shown in the gallery by the Double Flush Cisterns, Ltd., 6 Lloyd's Avenue, E.C. The cistern is divided into two compartments; the second compartment being filled by the overflow from the first, enables a second flush to be obtained, when required, immediately after the first. The refill is both rapid and silent, and by the improved syphoning plungers the flush is delivered at full bore and at once.

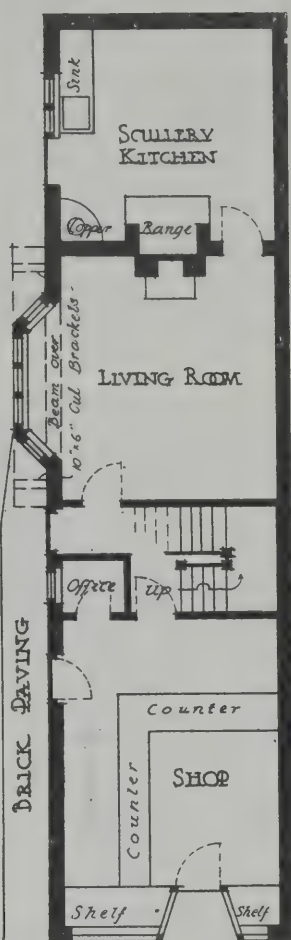
The Havana Exploration Co., Ltd., as proprietors of the British Cork Asphalt, Ltd., exhibited in the gallery the familiar "Cork Asphalt," "Corkadamant," "Corkite," and "Cormastik." The first is a durable, noiseless paving for the heaviest traffic; "Corkite" is for heavy pedestrian traffic, and was recently selected for laying inside and outside the L.B.S.C.R. station at London Bridge; "Corkadamant" is a fire-resisting, noiseless, and jointless flooring laid in situ, and "Cormastik" is a compound which may be spread on old macadam roads, on stone setts or wooden blocks to resurface them, or it may be made into paving bricks.

The "Shark Grip" Tiling Co., Ltd., are not content with giving the patent shark's tooth backing to their tiles, which gives them such a firm attachment, but they have a special close joint and a pliable bitumen backing which ensures them against cracking and facial crazing and renders them immune from any effects of vibration. The tiles are fixed on a five-year guarantee. The firm also showed tiled flooring, terrazzo and mosaic, parquet flooring, &c.

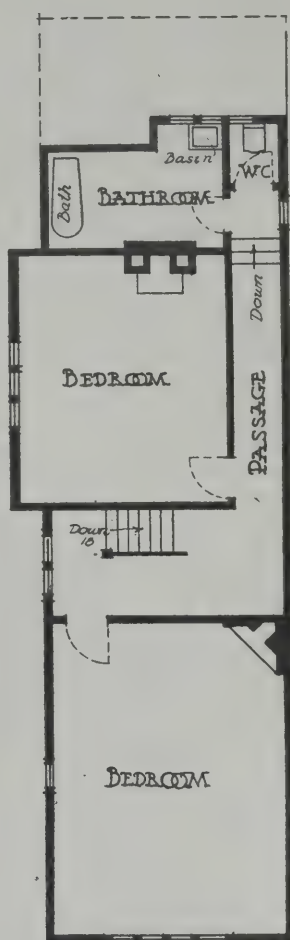
Messrs. Tuke & Bell, Ltd., 69 Leadenhall Street, E.C., as sewage specialists, showed a semi-septic sewage installation suitable for a house in the country, a model of an institute or village installation for sewage purification, "Grip" road covers and frames, and other highly useful accessories. Their



SHOP FOR MR. A. G. WHITTENHAM, FERNDOWN, DORSET.
Designed by Mr. H. BRYANT-NEUBOLD. Drawn by Mr. O. NEUBOLD.



GROUND FLOOR PLAN.



FIRST FLOOR PLAN.

Auto-flush" revolving sprinklers are guaranteed for eighteen months. In these the distributing pipes and orifices are automatically kept clear by frequent flushes of liquid from cistern having 10 feet head over the revolving arms.

Messrs. Stephens & Carter, Paddington Green, W., have a comprehensive exhibition of ladders, barrows, trestles, steps, and other plant for building purposes and for local authorities, which they keep both for sale and for letting on hire. The three patent specialities were wire scaffold cords, wire-rope rubbish basket with an iron rod through the handles and bottom, and a "Kruse-cradle" for use on a ladder.

A large assortment of sewer ironwork and appliances were on the stand of Messrs. George Waller & Son, Stroud, including some of "E.F.B." patents. The firm also are sole makers of the "Pinkney" gas engines and "Bexley" cesspool pumps, and other engineering apparatus.

Messrs. Homan & Rodgers, 17 Gracechurch Street, E.C., exhibited their widely-known hollow brick fire-resisting floor and ferro-concrete fire-resisting floor and partitions. The former is constructed of steel joists 1 foot 6 inches apart with triangular fireclay hollow bricks between and a filling of concrete. The floor is light and inexpensive. The patent reinforced floor is of steel rods used in conjunction with the bricks.

Arthur Sanderson & Sons, Ltd., arranged their stand in the form of a single room, the interior walls of which were decorated panelwise with a new grey paper and border giving pilaster effect which was very effective. There were besides fine array of sample wallpapers. The outside showed "Wal a Mur" water paint, "Paripan" lacquer enamel, and "Gilmour" doors. For the latter patent they are the sole agents in this country.

To many county and borough surveyors the stand of Messrs. Llewellyns & James, Ltd., Bristol, showed a valued rival in the shape of the "W. & B." patent tar-spraying machines. These are in use by a large number of local bodies, and have given very great satisfaction. Proof of this is found in the catalogue of the machine, which almost entirely consists of laudatory testimonials received last autumn from English and Welsh officials.

There are so many grates, ranges, and boilers now on the

market that the Bell Range & Foundry Co., Ltd., Northampton, and 70 Mortimer Street, W., were very well advised in relying mainly on Delft faience to attract attention to their stand. They are the agents for a Delft firm who have been making this splendid faience for, we believe, more than two centuries. On the stand there were many striking examples of Dutch work, as well as "Bell" grates and boilers and French tiles.

The specialities of G. Tucker & Son, Ltd., Loughborough, are hand-made facing bricks and roofing tiles. Several varieties of the former were shown in the gallery, as, for instance, the "T.S.L.," "Rustic T.S.L.," and "Old Style T.S.L." Arches constructed of "T.S.L." hand-made sandstock facing bricks illustrated how semi or flat arches are sent out lettered and numbered for erection. Their "Loughborough" roofing tiles are guaranteed against damage by frost. Special bricks are made by this firm for purposes like bakers' ovens and engineering bricks.

The "Martlett" casement is strikingly different from most of the many other casement windows. It must, for instance, be hung in double leaf—i.e., hinged in centre. In order to open the window it is pushed outwards so that the two sides leave their frame and the double window assumes the shape of a triangle. The two wings may be securely locked in any position, and they may be brought so close together as to practically form but a single leaf at right angles to the frame and at any point along it. The casement is watertight, as there is a water-bar along the bottom of the frame, and the two sashes fit into a groove on each side. When open the weight is carried by ball bearings instead of by the hinges, though most of the strain is taken by the balance of the two sides of the triangle. In a range of four casement windows the centre pair may be arranged as a "Martlett," so as to allow of the two others being accessible for cleaning from the inside, though of the ordinary type. This window was exhibited by the Martlett Casement Co., Eastbourne.

"Filocol" distemper is made by the Gelatinous White Co., Ltd., Southall, W., as either a paste in casks or a powder in seven-pound packets. Two kinds of the former are made, one for inside and the other for outside use, and two kinds

of the powder, one for hot and the other for cold water. "Filocol" is specially made for whitening walls and ceilings, but it may be had in tints. It is claimed that it effects a great saving of time over the old-fashioned methods of distempering and that it is absolutely pure.

H. S. Goodwin & Son, 16 Charles Street, E.C., exhibited a varied collection of builders' joinery, including compoboard (made by a new dry-core process with damp-proof cement and waterproof paper), staircases, and beaver boards.

Messrs. Barford & Perkins, Peterborough, showed a patent water-ballast motor roller (petrol or paraffin) specially adapted for tar-macadam road repairs and for patching. When the tank is filled with its 180 gallons of sprinkling water the stone box, with its 15 cwt. of stone and the cylinder, the total weight is about eight tons. The roller is worked by one man, and dispenses with the customary water and coal carts.

The Teale Fireplace Co. enjoy the not inconsiderable satisfaction of being by special appointment fireplace makers to H.M. the King. They also claim that they are the original patentees and manufacturers of the barless or well type of fireplace, their original patent being some years prior to that of any other. They have since patented further improvements, notably the carpet protector, which enables them to use a hearth 4 inches high instead of 6 inches. All their fireplaces are provided with a controllable air supply. In the "Front Hob" sunk fireplace the ashes drop into pans and can be removed without letting the fire out, which is an important point in a sick room. The firm make a speciality of the manufacture of ward stoves and of wood mantels.

Messrs. Hammond & Champness, Ltd., show a variety of lifts, including an electric-service lift containing the winding gear, controller, &c., in the cage, so that no casing is required overhead. The cage rises through a floor opening which automatically closes as the cage descends. The same ingenious principle is applied to their type "E" hand-service lift. A safety invalid lift, which can be worked from either the floor or by the occupant of the cabin with perfect ease, was also on the stand. The exhibit included various models.

Messrs. Lips, Ltd., who recently opened a showroom at Kingsway House, Kingsway, W.C., made an interesting display of safes, caskets, safety bolts, locks, and other goods of a like nature. The firm have enjoyed a large experience in the design and construction of steel strong rooms and safe deposits, as well as in making the smaller guards against thieves and fire. Five of their safes were in use by the Belgian Union of Jewellers, Goldsmiths, Diamond Merchants, and Watchmakers at the Brussels Exhibition of last year. When the disastrous fire occurred their contents were valued at over a million pounds sterling. The assessor representing the English insurers who was present when the safes were opened after the fire reported "these safes were very efficient, and I regard them as of A1 standard."

The British Vacuum Cleaner Co., Ltd., brought to the exhibition six types of their machines, and a series of demonstrations were given. The types ranged from a 2 h.p. electric motor vacuum cleaner for fixed-installation work to an "A.L." type $\frac{1}{4}$ h.p. portable cleaner, and also included several kinds of hand cleaners and "Excelsior Ideal" sweepers with electric motor.

Messrs. Sharp, Jones & Co., Dorset, showed rock-concrete sewer manholes, the "Aquatite" patent self-contained manhole bottom for waterlogged ground, and rock-concrete applied to sewer tubes, tanks, interlocking roofing tiles, &c. Concrete tubes were introduced into this country by Sharp, Jones & Co. over thirty-five years ago, and they are now specialists in the application of rock-concrete to sewerage purposes, by virtue of their very wide experience. The tubes are made of a very dense and heavy concrete composed of granite from the Channel Islands and a special Portland cement.

The Aerogen Gas Co. and Strode & Co. were exhibiting on the same stand some of their various lighting specialities. The "Aerogen" petrol gas generator is primarily one of the weight-driven class, though it has been adapted to a hot-air motor and to water-power. *Messrs. Strode & Co.* have many departments to their business, and of these only a few were touched on at Olympia. These included an art metal work display, especially as applied to fittings for electric light, air gas, &c.

One of the newcomers to Olympia was the firm of *William Morris & Co., Ltd.*, Ruskin House, S.W. As exemplifying the decorative side of the building trade they are welcome. On their stand were examples of their stained and leaded glass work, metal work, and door and window furniture. A special feature was made of the patent metal casements

fitted with an automatic reversible hinge. To reverse the window it is opened at right angles and then lifted from its normal hinge and reversed upon the projecting pivot. In the "Victoria" reversible casement the hinged side may be moved to both the right and left by releasing a bolt in the frame.

Messrs. James Stott & Co. showed their patent warming and ventilating apparatus for all classes of building. Their ventilators included such forms as the ridge, flue outlet, quadrant inlet, concealed roof, and the louvre. Amongst the other exhibits were their mercurial gas governor, of which 250,000 are in use; an instantaneous water heater and an automatic gas boiler, and gas pendants.

F. Johnson & Co. (Hull), Ltd., exhibited a "Paragon" concrete block-making machine which works by either hand or power, and also the latest type of "Paragon" mixer. The standard size of the blocks is 18 by 9 by $6\frac{1}{2}$ inches, and their weight is about 50 lb. They are made automatically under hydraulic pressure and without tamping.

John Jones (Chelsea), Ltd., so arranged their stand that one side showed high-class sanitary fittings, such as bathroom suites and water closets, while the other was devoted to a very large collection of general sanitary fittings of a more strictly utilitarian character.

W. T. Lamb & Sons, 21 Essex Street, W.C., put up a pavilion to display the bricks and tiles of the different firms for whom they act as agent. One conspicuous feature was the primrose facings made by the Northam Brick Co., of Eye Green; another exhibit was the mottled tiles from the G. W. Lewis' Tileries, Ltd., Nuneaton, who keep thirty-six shades of the "Rosemary" tiles in stock.

It was not surprising to find that before the close of the exhibition the charming lych gate in English oak with cleft oak shingle roofing exhibited by *Mr. George Blay*, New Malden, was marked "Sold." The work was of very pleasing design and was well carried out. On the stand were also a number of wooden gates and patterns of fencing, and in one corner a general show of roofing tiles.

Colliers, Ltd., brick and tile manufacturers, have works in different parts of Essex. Their gravel pits at Stanway, near Colchester, are drawn upon for purposes of filtration, cement paving, and stone-dashing. Their stand showed the many kinds of bricks and tiles turned out.

La Brea Asphalte Co., Ltd., are the sole importers of "Breala" natural rock asphalte of Limmer quality, which is obtained from mines in Brunswick. The purposes for which it is used are innumerable, and include acid-proof asphalte, mastic dampcourse, bitumen cavity cement, pure bitumen sheeting, and bituminous solution. The firm are contractors and paviors in all kinds of foreign rock and British asphaltes.

Messrs. Wilkinson, Heywood & Clark, Ltd., 7 Caledonian Road, N. (established 1796), are veterans at winning honours at exhibitions, for as far back as 1862 they were awarded a prize medal for varnishes, colours, and oxidised oils at the International Exhibition in London. They introduced non-poisonous colours over thirty years ago. Their stand at Olympia was arranged to make an attractive display of their many manufactures. Several attractive colour schemes suitable for high-class decorative work were to be seen.

H. J. & C. Major, Ltd., Bridgwater, were represented principally by their patent weatherproof interlocking roofing tiles in different patterns, which may be used with confidence on a roof with pitch as low as 30°. They can be securely fixed without nails, they do not require mortar or cement, or counter-lathing. Bricks, ridges, and other clay goods were also on the stand.

Messrs. Carter & Co., Kingston-on-Thames, gave continual demonstrations with their patent reversible sash window in which both the upper and lower sashes may be lowered out of their frames to a horizontal position inside the room for the purpose of cleaning, re-glazing, or painting.

Percy Heffer & Co., Ltd., 64 Berners Street, W., made a good show of wallpapers of the latest designs and colours. Particularly curious were those representing the willow pattern on a ground of black, and another against a rich red. In the matter of wallpapers there seems to be the widest scope for individualism, but anybody would be hard to please who did not find attraction in something or other that *Messrs. Heffer & Co.* stock. One side of the stand was framed up to form panels treated with "Decorine," a water-paint made from a non-poisonous base. All its colours are fast to lime, light, and air.

The pyramidal form adopted by *Stanley Bros., Ltd.*, Nuneaton, for their stand enabled a good idea to be obtained of

their glazed bricks and glazed terra-cotta. The structure was surmounted by large glazed vases.

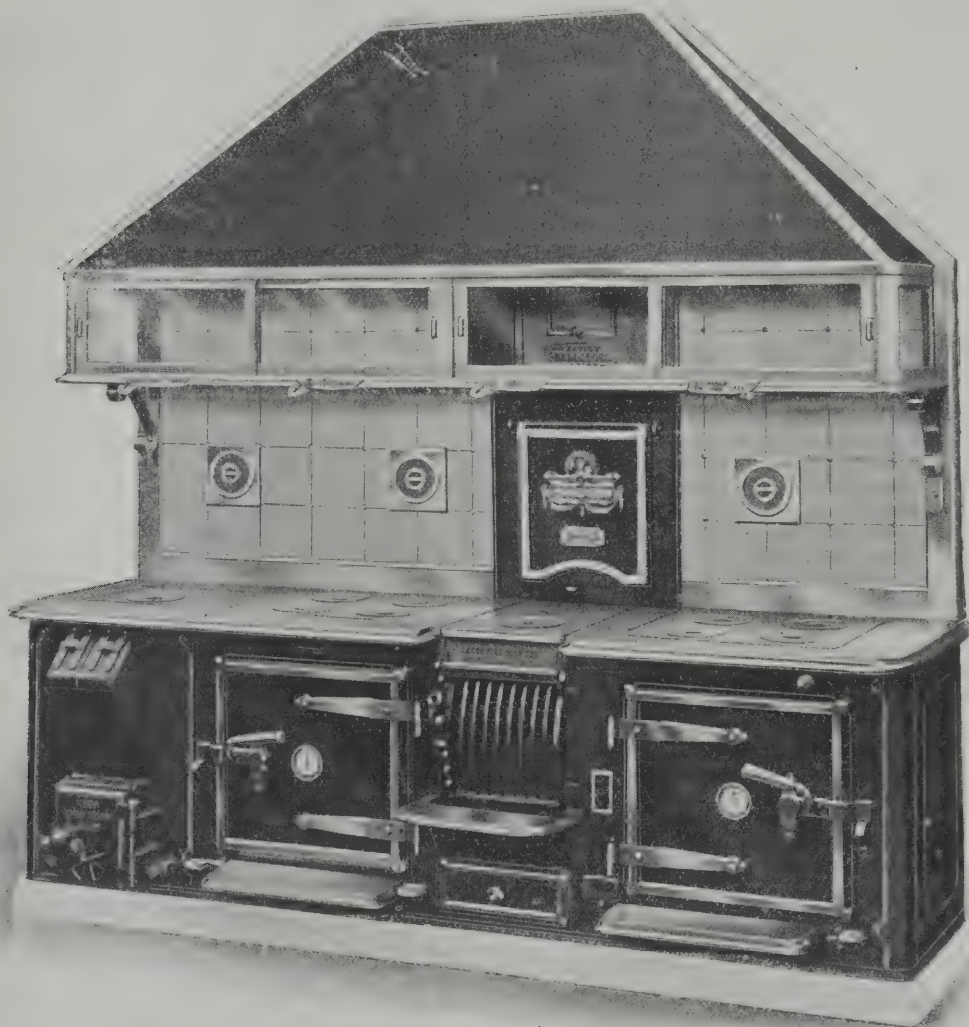
Amongst the exhibits of *Messrs. Smith & Wellstood* perhaps the most interesting was their new patent "Sidelight Wellstood" range with "Wellstood" independent boiler combined. Standing out from the wall without side jambs, good side-light is obtained, and the oven doors being lined with white enamel reflect light into the interior. There are two ovens, one for baking, the other for roasting, both fitted with heat indicators and pedal openers. Plate-rack and hot closet, with glass sliding doors, indicating dampers, open or close fire with lifting bottom, nine round covers to hot plate, and other refinements, including non-conducting doors and ends, make this a model kitchener of very high class for easy and efficient cooking, but perhaps the best of the many good features is the independent boiler, which abolishes one of the greatest drawbacks of most kitcheners, the waste of fuel in keeping up hot-water supply when cooking is not in progress. The range as shown in our illustration is made in two

roofing by sticking the metal strips with "Stucatine" over the joint; "Calorine" paint for radiators, hot-water pipes and other heating apparatus, and, lastly, artistic fabrics.

C. J. Thursfield & Co. are widely known as specialists in the design and manufacture of electric-light fittings. Of these many very interesting and artistic examples were shown. They have brought out an excellent device for so fixing the small glass shades bought for carbon filament metal lamps as to make them long enough to shade the large metal filament lamp now in use.

The Banner Sanitation Co., 24 Craven Street, W.C., showed a large number of their specialities, including several drain-testing appliances and drainage and sanitary fittings. The firm are prepared to undertake the sanitary examination of public and private buildings and to draw up schemes for water-supply or sewage-purification and disposal.

John Freeman, Sons & Co., Ltd., of Penryn, Cornwall, had an interesting exhibit of Cornish granite, which included



sizes, 77 inches and 83 inches wide, and although even the smaller may seem too costly at 60*l.* for a small house, the saving of fuel would pay a handsome return on the cost, to say nothing of the comfort and efficiency.

John Line & Sons, Ltd., were represented by their colour department. The exhibits covered a wide field, and included enamels, varnishes, and japans, wood finishes, damp-resisting preparations, protective paints for iron and steel, as well as mechanical novelties for painters and decorators.

Messrs. Benham & Sons, Ltd., 66 Wigmore Street, W., were represented by (1) a "Wigmore" independent hot-water supply system consisting of a special boiler and a cylinder or hot-water tank; (2) a "Wigmore" kitchener; (3) a wrought-steel central hot plate; and (4) by other kitchen accessories.

F. McNeill & Co., Ltd., had a representative display of dampcourses, roofing felts, waterproofing materials, and other specialities which have become necessities to the building trade.

Mr. G. Collantier, Caxton House, S.W., showed "Stucatine," a new patent stone-coating paint for inside or outside work which gives a very hard surface to any material; "Lino-metal," a new process for making watertight glass

a section of the parapet in that material which is being supplied for the embankment wall at the L.C.C. County Hall. The granite was shown both carved and in the form of setts and street curbs.

The "Sanitas" Co., Ltd., Limehouse, E., included among their highly efficient sanitary specialities a "Kingzett" patent drain-tester. This is in the form of a spring bi-valve which, when a length of twine is unwound, opens and drops a quantity of chemical. The chemical is so packed that it gives off a quantity of gas, enabling the user to detect leaky drains by its strong odour.

Justifiable pride is felt by *Mr. Sam Deards*, Harlow, in the fact that he secured with his patent "Superior" roof-glazing the largest contract given out by the Admiralty for work of the kind. The area covered was 102,000 feet super in the new steam factory in Portsmouth Dockyard. The "Superior" system dispenses with screws, putty, paint, or springs; the steel bar is entirely covered by hand with sheet lead. On the same stand was *Smale's* concrete block-making machine.

Wm. Harland & Son, Merton, S.W., had two stands side by side for the display of their materials. One was a green

structure and the other was a white one. The latter was finished with "Snowite" enamel as used on the Royal yachts "Victoria and Albert" and the "Alexandra."

The *Ivoril Plaster Co.*, Middlesbrough, showed "Stonament" as well as "Ivoril" plaster on their stand. The former is a new patent system for treating the outsides of new or old buildings so as to give them a stone face of the desired appearance. "Ivoril" is a plaster for interior work which gives a particularly hard and smooth surface capable of being washed or cleaned.

The "*Young Firm, Ltd.*, Bethnal Green, E., made their customary display of American hardwoods, pine, teak, and mahogany; turnery and mouldings; newels, balusters, &c.; plywood and oak flooring. Orders can be executed equal to the samples shown.

Messrs. *Gross, Sherwood & Heald, Ltd.*, Barking, erected a handsome and lofty structure for the advantageous display of Sherwood's "Rystolite" enamel, which numbers amongst its many users the Office of Works. It is sold in white, cream, ivory, and ninety-six colours and tints, giving either a gloss or flat surface.

Rubber flooring in an uncommon form was exhibited by *Charles L. Cuthbe & Co.*, 37 Great Eastern Street, E.C., under the name of "Rubberled." As its name suggests, this consists of rubber tiles interlaced with lead strips. Experience has shown a tendency in some cases for the ordinary rubber tile to become loose. This failing is here counteracted by the pieces of lead into which they fit. The possibility of slipperiness is also overcome in the same way. It is recommended that the flooring should be laid by the skilled workmen of the manufacturers. The company have prepared some good designs. This material puts a full palette of colour at the service of architects and lends itself to many pleasing patterns.

Two novelties were put forward by *Mr. E. G. Wright*, Guildford. One was his patent down-blow preventor for geysers and gas stoves in place of the baffle. It may also be used for ventilating soil pipes, or any other purpose in which it is desired to allow fumes to escape into the open air without permitting a back-draught. The same principle is used for his self-acting room ventilator. This is fixed on the outside of a room a little below ceiling level, and as the wind passes through the metal box it draws out the vitiated air from the inside. These patents have been adopted by the Office of Works, the London County Council, the London, Brighton and South Coast Railway, &c. *Mr. Wright* also exhibited the "20th Century King Chimney Cowl" and "Excelsior" stoneware pot.

London Warming and Ventilating Co. Ltd., W., had in action their patent "Florence" Boiler Grate which burns any sort of fuel; also the "Record" Range; the "Leon" anthracite continuous burning stove; the "La Française" boiler stove for heating one to four radiators; and various continuous burning stoves.

The *Anglo-American Oil Co., Ltd.*, exhibited for the first time their new preparations for dressing and binding macadam roads which they are selling under the name of "Roadoleum." These are fluxed and pure asphalt obtained in several consistencies.

The *Northern Quarries Co., Ltd.*, showed specimen sections of Quarrite paving after use on streets having a heavy traffic; specimens of Bitulithic paving, and samples of the stone from which the Quarrite paving is manufactured.

The *Limmer Asphalt Paving Co., Ltd.*, always can be counted on for a good display of their various materials which have been used as horizontal and vertical damp courses, flooring, roofing, &c., on many of the most important buildings throughout the Kingdom. Their Lithofalt paving blocks and Lithomac asphalt paving blocks are also well known.

Vincent Brooks, Day & Son, Ltd., 48 Parker Street, W.C., showed specimens of their "True-Scale" photo-litho, for making from six copies to ten thousand; their "Vinbede" True-Scale System is intended for turning out under six copies; specimens were also shown of their general lithographic work like specifications, estate plans and posters. The firm make toned blocks and the ordinary photo-litho reductions and enlargements.

Messrs. *William E. Farrer, Ltd.*, Birmingham, again exhibited their patent sewage distributors. Farrer's facile rotary distributor dispenses with dosing syphons and intermitting valves. The improved distributor for rectangular beds is intended for small schemes. Both are to be commended for their efficiency.

B. J. Hall & Co., Ltd., Victoria Street, S.W., included in their stand some most up-to-date things in the way of drawing office equipment. These included a vertical electric copier, the "Catena" adjustable drawing table, a Standard

double elephant drawing cabinet, and a patent drum continuous copier, printing two classes of paper at one time and dealing with copies of any length.

A. C. W. Hobman & Co., South Bermondsey, S.E., have acted as contractors to the Government and the London Board Schools for thirty years. They specialise in tar paving, tar macadam, asphalt, artificial stone, "Cliftonite" paving, and "Emerite" non-slippery stair treads.

The *Abdon Clee Stone Quarry Co., Ltd.*, Bridgnorth, and the *St. Keverne Stone Co.*, Cornwall, were among the exhibitors up in the gallery whose stands were particularly calculated to appeal to surveyors.

Messrs. *Burn Brothers*, 3 Blackfriars Road, S.E., made a brave show with their sanitary and sewage disposal specialties of many kinds. They included cast iron drain pipes, flushing tanks, sluice valves, drain plugs, and drain cleaners.

The "Kulm" hollow brick system of construction as applied to floors, roofs, and staircases was shown by Messrs. *Horace W. Cullum & Co.*, Craven House, W.C. The "Kulm" partition slabs of pumice and Portland stone were also exhibited.

One of the imposing displays in the gallery was that made by *Millars' Karri & Jarrah Co. (1902), Ltd.*, of their West Australian hardwood, which lends itself so admirably to paving. But the wood is also used for window sills, chairs, tables, and other purposes.

Messrs. *Mellows & Co., Ltd.*, showed two model bathrooms, several water closets, and lavatories. Special attention was drawn to their recently patented "Pneumonic" silent action waste water preventer cistern and to the "Eclipse" Glazing.

The *Tella Camera Co.*, who make a speciality of photography for architects, contractors, and builders, were appointed to act as official photographers to the exhibition, and in that capacity had no little work to do.

Structures in brickwork were put up by *James Brown (London), Ltd.*, and the *Benfield Brick & Tile Co.*, to display their different kinds of bricks.

Moule's Patent Earth Closet Co., Ltd., were represented by their specialities.

The *Hoo Brick Co., Ltd.*, Rochester, installed a Brice's automatic brickmaking machine, as well as exhibiting their red and sand stock and moulded bricks, washed sand, and graded shingles. The machine consists of two presses, and is capable of turning out up to ten thousand bricks a day of ten hours, all of first-class quality and perfectly symmetrical. It can be driven from the pug mill shafting.

The latest improved type of the "Hornsby-Stockport" gas engine was shown by *Richard Hornsby & Sons, Ltd.* Some thirteen thousand of these engines are in daily use. Another machine is the "Hornsby-Stockport" suction-producer gas plant, which consists of—(1) A generator lined with fire-brick in which the gas is made; (2) a vaporiser for producing the steam or vapour from the heat of the gas; (3) a scrubber for cooling and cleaning the gas; and (4) a reservoir box from which the gas engine draws its supply. The general arrangement of these parts can be planned to suit the place at disposal.

TRADE NOTES.

MESSRS. W. M. POTTS & SONS, LTD., clock manufacturers, Guildford Street, Leeds, and Newcastle, have received instructions to make and erect a large turret clock at Messrs. Pease, Sons & Partners, Ltd., Old Mill, Darlington. The company have also to make and fix a new Cambridge quarter-chime clock and illuminated dial at the Parish Church, Birtley, Co. Durham, from the designs and plans of the late Lord Grimthorpe. The Coronation Committee, Anlaby, Hull, have ordered a first-rate clock for the Parish Church, from the late Lord Grimthorpe's plans, from Messrs. W. Potts & Sons, Ltd. The firm are also making a new clock and bell for Colonel Harding, J.P., Madingley Hall, Cambridge.

MESSRS. E. H. SHORLAND & BROTHER, LTD., of Fails-worth, Manchester, have just supplied their patent Manchester Stoves for the Guards' Coffee Bar, Pirbright Camp; the Cottage Hospital, Runcorn, has also recently been supplied with Shorland's double-fronted patent Manchester Stoves, with descending smoke flues and patent exhaust roof ventilators. The Crook of Devon Public Institute, near Kinross, is being ventilated by means of Shorland's patent exhaust roof ventilators and special inlet ventilators, and the Hospital for Incurables, Newcastle-on-Tyne, is being supplied with double-fronted patent Manchester Stoves with descending smoke flues by Messrs. E. H. Shorland & Brother, Ltd.

VARIETIES.

MR. EDWIN L. LUTYENS has been appointed by the Johannesburg Municipal Council to prepare designs for a new art gallery which is to cost 20,000*l*.

MR. J. H. BECKETT, A.R.I.B.A., architect, Longton, has been instructed to proceed with the quantities and to invite tenders for the proposed extensions of the Town Hall at Longton, Staffs.

MR. PETER E. ROBERTS, J.P., chairman of the Mold Urban District Council, has undertaken to erect and present to the town as a permanent Coronation memorial municipal buildings, which will include council chamber, committee rooms, officials' offices, and accommodation for local literary society and free library.

MR. A. REEVE, architect, London, has prepared the plans for repairing the hammer beam roof at Cawston Church. The decayed portions will be replaced with English oak. The mouldings and carved work (of which a good deal is missing) will be restored, and the lead covering will be recast. The cost is estimated at 1,450*l*. Messrs. Cornish & Gaymer, North Walsham, will carry out the work.

GOVAN Dean of Guild Court granted linings last week for the following works: Extensions at engine-house at the electricity station in Helen Street, to cost over 2,000*l*; extensions of a boiler shop in Baird Street, belonging to Messrs. Dunsmuir & Jackson, engineers, by 313 feet in length and 50 feet in breadth; and alterations and additions to Lambhill Street School, in order to provide a suite of retiring rooms for teachers and increased accommodation for scholars. The School Board intend to spend 6,000*l*. on the improvement of this school.

THE Northumberland Education Committee have approved the plans prepared by their architect for the proposed secondary school and technical institute for 140 boys and 140 girls at Wallsend. The cost is put down at 10,800*l*., exclusive of furnishings and equipment.

THE Corporation Electricity Works at Alloa, N.B., are to be extended at a cost of 3,400*l*. The additions, for which plans have been passed by the Dean of Guild Court, include new buildings for the generating plant and a gas-producer plant house.

MR. H. A. JOHNSON, C.E., Bradford, has submitted a report to the local Council on the subject of proposed sewerage improvements at Otley, and he recommends the construction of new sewers, manholes, &c., 2,200*l*; alterations at sewage disposal works, 5,200*l*; and a refuse destructor, 2,550*l*; a total of 9,950*l*.

THE fund for the enlargement of the ancient parish church at Hendon now stands at about 4,500*l*., and as the cost of the work will not be more than 6,000*l*., it is hoped that the increased accommodation will be provided at an early date. The sittings will be increased from 457 to 807. Mr. Temple Moore has prepared the plans.

THE North Eastern Railway Company are about to enter after long consideration upon an extensive improvement scheme at Bridlington railway station. It is proposed to lay two additional lines, making the existing up platform an island platform of 60 or 70 feet in width, and to erect new station buildings and booking hall near the existing excursion station. The scheme will cost 30,000*l*.

H.M. CONSUL at Bucharest (Mr. E. MacDonell) reports that the Roumanian Chamber has voted a special credit of 2,240,000*l*., to be devoted for the greater part to public buildings in the capital and provinces; 120,000*l*. for the continuation of the Constanza harbour works; 120,000*l*. for the completion and fitting of two frontier slaughterhouses; 36,000*l*. for the construction and installation of cold storage buildings for the fishing industry of Galatz and Tulcea (State owned).

THE Local Government Board have approved of the scheme prepared by Mr. Harry W. Taylor, A.M.I.C.E. (Messrs. Taylor, Wallin & Taylor), of Newcastle, for the augmentation of the waterworks of Petersfield town. The works consist of tapping springs in the chalk measures, construction of intake works, laying several miles of cast-iron pipes from the springs to the town, ferro-concrete works at the reservoirs, &c.

THE last meeting of the executive of the Scottish Building Trades Federation was held in the premises of Edinburgh, Leith, and District Building Association, at 61 Lothian Road, Edinburgh. Representatives were present from Aberdeen, Inverness, Kilmarnock, Edinburgh, and other centres. Reports on the state of trade throughout the country showed that, generally speaking, there was a slight improvement. In Edinburgh and district particularly there were indications of a revival.

THERE is some demand for portable houses in the Congo State, and, according to the Board of Trade Journal, several inquiries for catalogues of these have been received by the Governor-General at Boma. Catalogues should give particulars of the materials of which the houses are made and of the dimensions, as well as the conditions of sale.

THE "Golden Lion" in Deritend, an Elizabethan building of considerable archaeological interest to the citizens of Birmingham, which was purchased by public subscription and presented to the city, has been taken down and re-erected in Cannon Hill Park, Birmingham.

THE Rochdale Corporation are undertaking a scheme of sewage works extension, involving an expenditure of 31,500*l*. Part of the work they will do themselves, but the chief contract has been let to Mr. J. E. Bentley, of Bradford. The tenders ranged from 25,000*l*. to 28,000*l*., and that of Mr. Bentley was about 25,600*l*.

THE Glasgow Parish Council have resolved upon the erection of a colony for epileptics in the lands of East Muckcroft, at Woodilee, and at a recent meeting the Woodilee Asylum Committee agreed that the 46½ acres required for the purpose should be rented to the Council at 70*l*. per annum. The Local Government Board have approved of the site. It has been further resolved to erect a large hall for recreative purposes.

A BIRMINGHAM and District branch of the National Association of Master Heating and Domestic Engineers has been formed. Mr. W. L. White (Birmingham) was elected president of the association, and Mr. W. Nelson Haden (Birmingham and Trowbridge) vice-president. The association will embrace in its operations the counties of Warwickshire, Worcestershire, and Staffordshire, and has as objects the raising of the standard of the trade, the standardisation of fittings, and the promotion of technical education.

THE Newcastle Corporation have granted to Messrs. Dickinson, Miller & Turnbull, solicitors, Newcastle, a perpetual lease of 300 square yards of the Cross House site in Westgate Road, which the Corporation purchased some years ago for street widening and which has since been vacant. It is the purpose of the lessors to erect a large building to be used as offices. The structure, several storeys high, will be approximately triangular, and will have two main doors towards Grainger Street and Westgate Road. The architects are Messrs. Cackett & Burns Dick, Pilgrim Street, Newcastle.

A REPORT by His Majesty's Consul at Venice (Mr. E. de Zuccato) on the trade of that district in 1909-10 says:—There is nothing new to report as regards British trade in general in the province of Venetia during 1910. The Germans continue to hold all the trade formerly in British hands which they have captured, chiefly in machinery, electrical appliances, iron goods, crockery, &c. For instance, iron gas pipes, which until a short time ago were supplied by the United Kingdom, now come from Germany, although there are also factories in Italy; but the produce of the latter is considered inferior by local merchants. Presumably it is only the question of price which induces Italian traders to give preference to Germany, as the superior quality of British goods is universally acknowledged. No efforts appear to be made by British manufacturers to recapture the trade by sending out practical persons to inquire about German prices and to study the means of adapting themselves, if possible, to the ways and customs of the country.

AT Greenock Dean of Guild Court last week an application was submitted on behalf of Scotts' Shipbuilding and Engineering Company, Ltd., for permission to erect, in Cartburn Street and Springkell Street, an extensive addition to their works. The plans were for a building 422 feet in length, 126 feet in average width, and 42 feet in height all over, the frontage to the street to be of brick at a height of 30 feet, and the remainder of corrugated iron. The building is to be a steel-frame structure, built in spans of 50 feet, and equipped with overhead travelling cranes, the whole to be entirely roofed with glass. It was pointed out by the master of works that under the new Greenock Corporation Act, 1909, no building could be erected at a height greater than the width of the street. The proposed height of those buildings was 10 feet greater than the breadth of Cartburn Street. On behalf of the petitioners, it was contended that under another section of the same statute the Corporation had powers, in exceptional circumstances, to grant a relaxation from this rule. The plans were passed on the understanding that the condition regarding the height of the building was complied with, and intimation was made by Scotts' Company's agent that application would be made to the Corporation to exercise their statutory power in the matter. The principal purpose for which the buildings are to be erected is the manufacture of ventilating shafts.

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Architect and Contract Reporter.

FRIDAY, MAY 19, 1911.

Published weekly, subscription 19s. per annum for Great Britain, and for Colonial and Foreign subscriptions £1 6s. 6d. All business communications to the Managing Director,

P. A. GILBERT WOOD,

Publishing Offices, 6-11 Imperial Buildings, Ludgate Circus, London, England.

Telephone No. 4725 Holborn.

Branch Offices at 43 OLD QUEEN STREET, S.W., Messrs. W. HAY FIELDING & CO. being the representatives for all business purposes.

The Birmingham Offices are at 102 COLMORE ROW.

. Entered in the United States of America as second-class matter.

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The International News Co., 5 Bream's Buildings, Chancery Lane, London, England, and New York.

AGENTS FOR CANADA:

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Special Position Spaces.—Unless ordered for weekly insertions the Proprietors cannot guarantee particular dates.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit the insertion of lengthy communications.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

. As great disappointment is frequently expressed at the nonappearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

ATHENS.—Sept. 25.—An international competition of plans is invited by the Greek Ministry of the Interior (Public Works) for the erection of a Court of Justice at Athens. The cost of the building must not exceed 160,000l. A first prize of 800l., and a second prize of 320l. will be awarded. The Greek Official Gazette, containing particulars (in Greek and in French) may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

BRADFORD.—June 1.—The Board of Management of the Bradford Infirmary invite plans with estimates for a new infirmary in Duckworth Lane. Mr. Keith D. Young, F.R.I.B.A., will act as assessor. Deposit 3l. 3s., which will be refunded on receipt of a bona-fide design or if block plan, instructions, &c., are returned within a month after receipt of replies to competitors' questions. The Secretary Superintendent of the Royal Infirmary, Bradford. (For further particulars see advertisement, January 13.)

BURSTOW.—May 26.—The Trustees of Archbishop Abbott's School, Guildford, invite designs and estimates for erection of a pair of semi-detached labourers' cottages on the Rookery Farm, Burstow, Surrey, to contain a living room, a scullery, and three bed-rooms, and to be provided with a water supply and the usual offices and outbuildings. Mr. H. P. Smallpeice, clerk, 138 High Street, Guildford.

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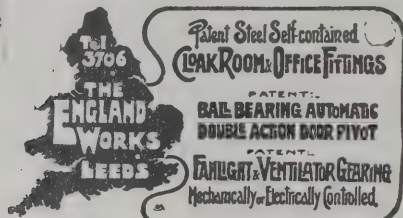
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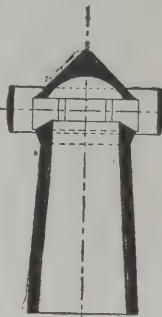
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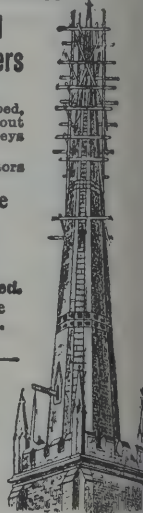
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NORTHAMPTON.—July 7.—The Borough Education Committee invite architects practising in the borough or county of Northampton to submit on the 7th July plans for a primary school for girls, to be erected in St. George's Lane. A plan of the site and a copy of the instructions defining the terms and conditions of the competition may be obtained from Mr. Stewart Beattie, Secretary, Education Committee, 4 St. Giles's Street, Northampton.

NORWICH.—June 2.—The Royal Agricultural Society prizes for plans of house and buildings containing accommodation suitable for a mixed farm not exceeding 50 acres in extent: First prize, 25*l.*; second prize, 15*l.*; third prize, 10*l.*; fourth prize, 5*l.*, for the Royal Agricultural Society of England Show at Norwich, June 26 to 30. Entries close June 2. Mr. T. McRow, Secretary, 16 Bedford Square, London, W.C.

SWANSEA.—June 16.—The Cymmer Co-operative Society, Limited, invite competitive designs for rebuilding business premises at Cymmer, Port Talbot. Deposit 5*s.* Premiums of 5*l.* and 2*l.* will be awarded to plans first and second in order of merit respectively. The Secretary, Co-operative Society, Cymmer, Port Talbot, Glamorgan.

SWANSEA.—July 1.—Competitive designs are invited for a school, schoolroom, and classrooms to be erected at the junction of St. Alban's Road and Finsbury Terrace, Swansea. Particulars and conditions may be obtained from the Secretary, Mr. D. Walters, 19 Brooklands Terrace, Swansea.

WHITLEY BAY.—June 7.—The Whitley and Monkton Urban District Council invite architects practising in Northumberland and the city of Newcastle-upon-Tyne to submit designs for the proposed factory buildings. A professional assessor has been nominated by the President of the R.I.B.A. to assist in drawing up the conditions and to advise on the relative merits of the various designs. The site-plan and conditions can be obtained on a written application being made, accompanied by a deposit of 1*l.* 1*s.*, which will be returned to every competitor submitting a bona-fide design. Designs, addressed to the Surveyor, are to be delivered to the Council Offices, Whitley Bay, on or before June 7. Apply to Mr. Augustus Whitehorn, Clerk to the Council, 60 Mill Street, North Shields.

YEovil.—The Corporation of Yeovil invite competitive designs as follows:—(1) For laying out a site of about 10 acres of land for the purpose of erecting houses for the working class, and (2) for houses to be erected thereon. In respect of each class of design premiums of 20*l.* and 10*l.* will be awarded. Particulars and conditions of site may be obtained upon deposit of 10*s.* 6*d.* from the Town Clerk, Yeovil.

CONTRACTS OPEN.

BANSTEAD.—May 24.—For the extension of school classrooms at their school, Banstead, Surrey, for the Managers of the Kensington and Chelsea School District. Deposit 5*l.* C. A. Sharp, architect, 2 Verulam Buildings, Gray's Inn, W.C.

BIGGLESWADE.—June 6.—For alterations and additions to infirmary at the workhouse. Deposit 1*l.* 1*s.* Mr. W. Jackson, architect, Market Square, Biggleswade.

BIRKDALE.—May 22.—For erection of certain fence walls around the Bedford Road Recreation Ground. The Surveyor, Town Hall, Birkdale, Lancs.

BIRMINGHAM.—May 22.—For building alterations to the stationary block at the Infirmary, Dudley Road. Messrs. H. Ward, architects, Paradise Street.

BURNLEY.—May 22.—For the separate trades required in erection of Wesleyan School Church, Queensgate. Send plans and 10*s.* 6*d.* deposit by May 22 to Mr. W. A. Quarmby, architect, Grimshaw Street, Burnley.

DRAX.—May 26.—For new out-offices at Drax, Yorkshire. Messrs. E. & T. Clark, clerks to the Governors of Drax Schools, Snaith.

CRANBROOK.—May 30.—For alterations at the workhouse infirmary. Mr. C. Payne, surveyor, Cranbrook, Kent.

EDINBURGH.—May 29.—For the carrying out of the following works in connection with the erection of Tollcross School, Fountainbridge, for the School Board, viz.:—(1) masonry and brick works; (2) carpenter and joiner works; (3) metal and iron works; (4) slater work; (5) plaster work; (6) glazier work; (7) plumber work; (8) painter work. Mr. J. Carfrae, architect, 3 Queen Street, Edinburgh.

EDINBURGH.—June 3.—For the various trades in connection with erection of a training college for teachers at Moray House. Deposit 3*l.* 3*s.* Mr. A. K. Robertson, architect, Canover Street, Edinburgh.

FARNWORTH.—June 3.—For erection of an elementary school for 878 children, in Queen Street. Deposit 3*l.* 3*s.* Mr. Frank Freeman, architect, 13 Bowker's Row, Bolton.

FINCHAM.—For erection and completion of semi-detached houses at Fincham, Norfolk. Mr. L. F. Eagleton, architect and surveyor, King Street, King's Lynn.

FINGRINGHOE.—For erection of a small farm house at Ball Farm, Fingringhoe, Essex. Mr. J. W. Start, F.S.I., architect, Colchester.

FIVE OAK GREEN.—May 25.—For the erection of a cottage at Five Oak Green, Capel, near Tonbridge. Mr. A. Barker, land agent, 38 King Street, Maidstone.

FRESHFORD.—May 23.—For erection of a cottage at Freshford, near Bath, for the Great Western Railway Co. The Offices of the Engineer at Bristol Station.

FROME (SOMERSET).—May 26.—For the execution of works comprised in the following contracts, for the Urban District Council, viz.:—Contract No. (5), laying a new out-fall sewer, consisting of a 3 ft. 9 in. by 2 ft. 6 in. egg-shaped and 24 in. diameter concrete tube sewer, and construction of all manholes thereon, together with detritus tanks, screening chamber, and pump wells; (6) erection of destructor-house and pumping-station buildings; (7) erection of dwelling-houses for the works foreman and night stoker; (8) erection of a refuse destructor, to be placed in the building mentioned under (6); (9) supply, delivery, and erection of sewage-pumping plant. Deposit 1*l.* 1*s.* each contract. Mr. F. W. Jones, A.M.I.C.E., Public Offices, Frome, Somerset.

GLASGOW.—May 31.—Constructional schemes and tenders are invited for the erection of the reinforced concrete floors, roofs, beams, columns, staircases, &c., in connection with the extension of Glasgow head post office. Any system or systems of construction may be adopted for the whole or any part of the work. Deposit 3*l.* 3*s.* H.M. Office of Works, 3 Parliament Square, Edinburgh, or at H.M. Office of Works, G.P.O., Glasgow.

HALIFAX.—May 26.—For the masons', joiners', plumbers', slaters', plasterers', concretors', and painters' works required in erection of ten houses in Cedar Street. Mr. Lister Coates, A.R.I.B.A., architect, 10 Central Street, Halifax.

HALIFAX.—May 27.—For the trades required in erection of additions to Ingwood Mills, West Vale. Messrs. C. F. L. Horsfall & Son, Architects, Lord Street Chambers, Halifax.

HULL.—May 24.—For builder's work of a small brick and concrete pumping station at Stoneferry Railway Crossing. Mr. A. E. White, M.I.C.E., City Engineer, Town Hall, Hull.

HULL.—May 24.—For the builder's and ferro-concrete work required in the extensions of the electricity works at Sculcoates Lane and in the sub-station in New George Street. Mr. A. E. White, M.I.C.E., city engineer, Town Hall, Hull. Send 1*l.* deposit to Mr. T. G. Milner, city treasurer.

JERSEY.—May 31.—For the construction of a parish hall in the parish of St. John. Mr. C. G. Bowles, M.S.A., architect, Halkett Place, St. John.

KIDDERMINSTER.—May 23.—For the enlargement of Kidderminster head post office. Deposit 1*l.* 1*s.* The Postmaster, Kidderminster, and H.M. Office of Works, Storey's Gate, London, S.W.

LEADGATE (DURHAM).—May 23.—For extensions at Leadgate Council School, Durham. Mr. G. T. Wilson, architect, Blackhill.

LEEDS.—May 22.—For the construction of a transformer chamber and switch-room at the Electricity Works. The Electricity Works, Whitehall Road, Leeds.

LEEDS.—May 25.—For the erection of a urinal off Kirkstall Road, near Haddon Place. Mr. W. T. Lancashire, City Engineer, Municipal Buildings, Leeds.

LEEDS.—May 29.—For the reinstatement of 58 Burman-tofts Street, recently damaged by fire, for the Corporation. Mr. W. T. Lancashire, City Engineer, Municipal Buildings, Leeds.

LEEK.—May 23.—For the following works to be carried out at the electricity generating station, Leek, viz., concrete foundations for new engine and dynamo, armoured concrete floor, and water tank in concrete and expanded metal. Deposit 1*l.* 1*s.* Mr. W. E. Beacham, C.E., engineer and surveyor, Town Hall, Leek.

LONDON.—May 23.—For the following works, for the West Ham Town Council, viz.:—(1) Erection of Fire Brigade quarters, Stratford; (2) street works, Mill Road, Silvertown. Deposit 1*l.* each contract. Mr. J. G. Morley, borough engineer, Town Hall, West Ham.

LONDON.—May 24.—For the erection of Wesleyan church at Winchmore Hill, N. Send names and a deposit of 2l. 2s. to Mr. A. E. Lambert, architect, 28 Park Row, Nottingham.

LONDON.—May 27.—For certain repairs and decorative work at the infirmary, Lower Road, Rotherhithe, S.E. Deposit 5l. note. Mr. E. Pitts Fenton, clerk, 283 Tooley Street, S.E.

LONDON.—June 12.—For erection of a refuse destructor for dealing with the refuse of the district, including the provision of the necessary buildings, chimney, boilers, machinery, &c., for the Barnes Urban District Council. Deposit 1l. 1s. Mr. G. B. Tomes, A.M.I.C.E., engineer and surveyor, Council House, High Street, Mortlake, S.W.

NEWBOTTLE.—May 27.—For building grocer's shop, warehouse, and stables. The Newbottle and District Co-operative Society, Ltd., Newbottle, Northumberland.

NEWCASTLE-UNDER-LYME.—May 20.—For erection of proposed Primitive Methodist church, Cross Heath. Send names and 1l. 1s. deposit by May 20 to Messrs. E. T. Watkin, M.S.A., & Adams, architects, Burslem.

NEWLYN.—May 20.—For rebuilding the Dolphin Hotel, Newlyn, Cornwall. Mr. H. Maddern, architect, 4 Morrab Road, Penzance.

NEWTON ABBOT.—May 30.—For erection of a new laundry at Brookhill, Highweek. Mr. S. Segar, F.I.A.S., Union Street, Newton Abbot.

NUNEATON.—May 26.—For erection of children's home. Send names by May 26 to Mr. E. E. Shepherd, M.S.A., architect, Nuneaton.

OTFORD.—May 24.—For the following works at the Isolation Hospital: (1) Constructing a cart-shed; (2) constructing a small lean-to greenhouse. Mr. E. Pawley, 86 High Street, Sevenoaks.

PEMBURY.—May 22.—For the execution of improvements at the Pembury Council School. Mr. A. T. Simpson, correspondent, 23 Church Road, Tunbridge Wells, Kent.

POOLE.—May 25.—For the following works, for the Town Council, viz.:—(b) Providing and erecting a new pair of gates at Park Gates East, Poole Park; (c) taking down present lodge and erecting new lodge at Poole cemetery; (d) levelling playgrounds and laying Mendip tar paving at Oakdale School, Branksome Heath School, and Heatherlands School. Mr. S. J. Newman, F.R.I.B.A., borough surveyor, Municipal Offices, Market Street, Poole.

PORTSMOUTH.—May 22.—(1) For providing and erecting a tuberculin dispensary in Anglesea Road at the corner of Park Road; (2) providing and erecting a removable bathing shelter on Southsea Beach near the South Parade Pier. The Borough Engineer's Office, Town Hall, Portsmouth.

REDRUTH.—May 27.—For erection of a class-room at the Primitive Methodist Sunday School, Broad Lane. Mr. S. Hill, architect, Green Lane, Redruth.

ST. ALBANS.—June 8.—For alterations and additions to the School of Art and Technical Buildings. Deposit 2l. 2s. Mr. Urban A. Smith, county surveyor, Hatfield.

ST. HELENS (LANCS.).—May 23.—For the erection of a gas office and show room at the corner of Warrington Old Road and Warrington New Road. Messrs. Biram & Fletcher, architects, George Street, St. Helens.

ST. HELENS.—May 24.—For erection of an engine house and other works at the Cropper's Hill Power Station, St. Helens, Lancs. Deposit 1l. 1s. Mr. E. M. Hollingsworth, borough electrical engineer, Town Hall, St. Helens, Lancs.

SCOTLAND.—May 24.—For the mason, joiner, iron, plumber, plaster, and slater works of proposed extension of the Chambers Institution, for the Town Council. Mr. G. Washington Browne, R.S.A., architect, 24 Charlotte Square, Edinburgh.

SCOTLAND.—May 27.—For the mason, carpenter, slater, plumber, plasterer, painter, and smith works of conveniences and wall in Cumming Street, and convenience in Glover Street, for the Elgin Town Council. The Burgh Surveyor's Office, Elgin.

SMITHALEIGH.—May 22.—For erecting a villa residence. Mr. R. Waycott, Smithaleigh, Ivybridge, Devon.

SNATH.—May 31.—For the bricklayers', joiners' and plumbers' work in connection with the improvements to be carried out at the Council school, Yorks. Mr. E. L. Harrap, Divisional Clerk, W.R. Education Offices, Goole.

STAFFORD.—June 3.—For the construction of a new engine house, boiler house, and boundary wall, at the waterworks pumping station, Milford. Deposit 2l. 2s. Mr. W. Plant, A.M.I.C.E., Borough and Waterworks Engineer, Borough Hall, Stafford.

STOKE-ON-TRENT.—May 23.—For the following work, for the Corporation of Stoke-on-Trent, viz., extensions to build-

ings at the Burslem Electricity Works. Send names by May 23 to the Borough Surveyor, Town Hall, Stoke-on-Trent.

SUMMERCOURT.—May 26.—For erection of a chapel for the Trustees of the United Methodist Church. Mr. Noel Bellamy, architect, Bodmin Road, St. Austell, Cornwall.

SUNDERLAND.—May 25.—For proposed cloak-room extension, &c., at Hylton Road Schools. The Borough Surveyor's Office, Town Hall.

SURBITON.—May 31.—For erection of three cottages at the site of the proposed sewage disposal works at Lower Marsh Lane. Deposit 1l. 1s. Mr. H. T. Mather, engineer, Council Offices, Surbiton.

SUTTON.—For the erection of a pair of semi-detached cottages at Sutton, Hull. Send names to Mr. A. Easton, architect, 5 Colonial Chambers, Prince's Dock Side, Hull.

TROON.—May 29.—For erection of Wesleyan Methodist church at Plantation, near Troon, Cornwall. Mr. S. Hill, architect, Green Lane, Redruth.

TRURO.—May 31.—For erection of proposed additions to the Royal Cornwall Infirmary. Mr. A. J. Cornelius, M.S.A. architect, Truro.

TYSELEY.—May 24.—For the construction of a goods shed &c., at Small Heath, and mess rooms, &c., at Tyseley, for the Great Western Railway Co. The Resident Engineer at Birmingham (Snow Hill) Station.

WALES.—For rebuilding, &c., the Cae-gurwen Arms, Gwaen-cae-gurwen. Deposit 2l. 2s. Messrs. J. Davies & Son, M.S.A., architects and surveyors, Cowell House, Llanelly.

WALES.—For erection of a Ragged School at the corner of Pleasant Street and Richards Place, Swansea. Send names and 1l. 1s. deposit to Messrs. C. S. Thomas, Meager & Jones, architects, 15 Wind Street, Swansea.

WALES.—May 22.—For building extensive additions to business premises in the Hayes, Cardiff, for Messrs. Morgan & Co. Deposit 3l. 3s. Messrs. James & Morgan, F.F.R.I.B.A., architects and surveyors, Charles Street Chambers, Cardiff.

WALES.—May 22.—For alterations and additions to the Masonic Temple, Guildford Street, Cardiff. Deposit 2l. 2s. Messrs. James & Morgan, F.F.R.I.B.A., architects and surveyors, Charles Street Chambers, Cardiff.

WALES.—May 22.—For the following works, for the Glamorgan County Council, viz.:—(1) New mixed department of the Council school at Clyne, near Neath; (2) new Council school at Maesmarchog, Onllwyn, near Neath; (3) alterations and additions to the Trebanos mixed Council school, Swansea Valley; (4) boundary wall and railings at Twyn temporary Council school, Caerphilly; (5) cricket pavilion at Penarth Council School. The Glamorgan County Council Offices, Westgate Street, Cardiff.

WALES.—May 22.—For the erection of a surgery, &c., at the rear of No. 3 Mountain View, Cwmfrwdoer, near Pontypool. Messrs. Pitten & Wilton, architects and surveyors, Club Chambers, Pontypool.

WALES.—May 23.—For erection of a goods shed at Llanelith, Mon., for the Great Western Railway Co., The Engineer at Newport Station.

WALES.—May 24.—For erection of 20 houses in Abercarn, for the Gwyddon Road Building Club No. 2. Mr. R. D. Roberts, architect, Abercarn.

WALES.—May 24.—Separate tenders are invited by the Cwmllynfell Congregational Chapel Trustees for the erection of (No. 1) vestry and Sunday School; (No. 2) vestry at Cefn Bryn Brain; (No. 3) the purchase of materials contained in the old Cwmllynfell chapel. Mr. E. D. Jones, Rainbow Hill, Cwmllynfell.

WALES.—May 25.—For building 27 houses at Ystrad Mynach, for the Bedlwyn Building Club. Mr. A. S. Cameron, architect, 1 Glanant Street, Aberdare.

WALES.—May 25.—For carrying out additions to Temple of Fashion, Perrott Street, Treharris. Mr. T. E. Rees, architect, Merthyr Tydfil.

WALES.—May 29.—For the erection of 17 houses or more at Woodfield, Blackwood, Mon., for the Church View Building Club. Mr. D. J. Thomas, architect, High Street, Blackwood, Mon.

WALES.—June 7.—For the work required in making roads and footpaths, laying subsoil and surface-water drains, building retaining walls, erecting messroom and bier house, entrance gates, and railings, and any other work necessary in the construction of a burial ground at Cwm, for the Ebbw Vale Urban District Council. Deposit 2l. Mr. T. J. Thomas, town engineer and surveyor, Ebbw Vale, Mon.

WALSALL.—May 27.—For erection of a new infant school in Glebe Street, and for alterations to the existing mixed

school and infant school, for the Managers of the St. Mary's Roman Catholic Schools, The Mount, Walsall. Send in application for quantities by May 27 to Messrs. Hickton & H. E. Farmer, F.F.R.I.B.A., Bridge Street, Walsall.

WALTHAMSTOW.—May 23.—For the erection of about 880 feet run of boundary walling in red pressed bricks, together with concrete retaining wall, &c., around the remainder of the site of the William Elliott Whittingham School, Higham Hill Road. Mr. H. Prosser, M.S.A., Committee's Architect, Education Committee Offices, Walthamstow.

WEDNESBURY.—May 25.—For erection of a clock tower in the Market Place. Mr. C. W. D. Joynson, architect, Spring Head, Wednesbury.

WILLENHALL.—May 23.—For erection of a stable at Willeshall, Staffs., for the Great Western Railway Co. The Engineer at Wolverhampton Station.

WREXHAM.—June 1.—For erection of extensions to the Imperial Hotel, Regent Street. Deposit 2l. 2s. Mr. F. A. Bevan, architect, 5 Queen Street, Wrexham.

WREXHAM.—June 6.—For the following works, for the Corporation, viz.:—(1) Alterations to the market hall shop; (2) alterations and extensions to the conveniences, windows, &c., at the Victoria Council schools; (3) painting at the general market and shops in Henblas Street; (4) painting of offices at the Willow Depot; (5) cleaning down and painting cemetery superintendent's lodge. Mr. John England, borough engineer, Willow Road.

YORK.—May 29.—For extensions to electric-car sheds, Fulford Road. Deposit 1l. 1s. Mr. F. W. Spurr, City Engineer, Guildhall, York.

TENDERS.

CALDECOTE.

For the erection of a villa, Caldecote, Bedfordshire, for Miss C. Metcalfe. Mr. THOS. COCKRILL, A.M.Inst.C.E., architect, 8 Bank Buildings, Bedford, and Biggleswade.

Wayman Bros.	£632	0	0
Haynes	569	0	0
Wright	560	0	0
H. COPE, Sandy (accepted)	539	0	0

HARTSHILL.

For new out-patient department at the North Staffordshire Infirmary. Mr. KEITH D. YOUNG (Messrs. Young & Hall), architect.

Ellis	£10,490	0	0
Grant	10,400	0	0
Arnold & Sons	9,959	0	0
Meiklejohn & Son	9,910	0	0
Godwin	9,879	0	0
Tompkinson & Betteley	9,747	0	0
J. & J. Warner	9,560	0	0
S. WILTON, jun., Staffordshire (accepted)	9,482	0	0

IPSWICH.

For additions to the Freemasons' Hall, Soane Street. Mr. G. H. B. GOULD, A.R.I.B.A., architect, Ipswich.

Cundall	£2,171	0	0
Death	1,962	0	0
Gayford	1,827	0	0
Kenney	1,774	0	0
Catchpole & Son	1,763	0	0
Grimwood & Sons	1,759	0	0
Sadler & Sons	1,730	0	0
Bennett	1,725	0	0
Cubitt & Gotts	1,680	0	0
PARKINGTON & SON, St. Margaret's Works (accepted)	1,515	0	0

All of Ipswich.

IRELAND.

For erection of a reinforced concrete bridge across the River Shannon at Hartley, within 1½ miles of Carrick-on-Shannon, for the Leitrim and Roscommon County Councils.

J. R. Thompson, Ltd.	£2,195	0	0
Yorkshire Hennebique Contracting Co.	1,600	0	0
Stuart's Granolithic Co.	1,098	0	0
Moss & Sons, Queen Anne's Chambers, Westminster, S.W. (accepted)	1,060	0	0

KENDAL.

For erection of a detached house. Mr. JOHN STALKER, JUN., architect, Kendal.

Accepted tenders.

T. Hine & Son, builders and slaters	£210	17	0
Allen, joiner	124	14	0
Parsons, plumber	50	0	0
Anderson, plasterer	28	0	0
J. Hine & Son, painters and glaziers	19	10	0

All of Kendal.

LONDON.

For painting the interior of the old portion of the Monnow Road School (Bermondsey), for the L.C.C.

King & Son	£650	0	0
Rice & Son	634	0	0
Goad	633	0	0
Kazak	617	0	0
Appleby & Sons	599	0	0
Downs	577	0	0
Holloway Bros. (London)	561	0	0
Holliday & Greenwood	549	0	0
Parker & Sons	517	0	0
Proctor & Sons, Plumstead (recommended)	515	0	0

For the erection of the proposed L.C.C. fire station at the junction of Shrewsbury Lane and Eaglesfield Road, Shooter's Hill, in substitution for the existing Shooter's Hill Station.

Patman & Fotheringham	£13,243	0	0
Higgs & Hill	13,148	0	0
Leslie & Co.	13,127	0	0
Holloway Brothers (London)	12,940	0	0
Johnson & Co.	12,928	0	0
H. L. Holloway	12,778	0	0
Charles Wall	12,770	0	0
Walter Lawrence & Son	12,724	0	0
E. Lawrance & Son	12,709	0	0
Kirk & Randall	12,533	0	0
Kerridge & Shaw	12,521	0	0
J. & C. Bowyer	12,475	0	0
Fred. & T. Thorne	12,300	0	0
William Downs, Walworth, S.E. (recommended)	11,973	0	0
Architect's estimate	12,700	0	0

MAIDSTONE.

For the erection of new drill hall, waggon shed, menage, and work to existing buildings at West Kent Place, for the Territorial Force Association of the County of Kent.

West Bros.	£5,238	0	0
Skinner	5,191	0	0
Wallis & Sons	4,993	0	0
Pearce & Sons	4,600	0	0
Corben & Co.	4,560	0	0
Cox	4,427	0	0
Clarke & Epps	4,363	0	0
Burrows	4,319	0	0
Elmore & Sons	4,278	0	0
BARDEN & HEAD (accepted)	4,114	0	0

RICHMOND.

For carrying out the building of new drill hall premises, Richmond, Surrey, for the Territorial Force Association. Messrs. JARVIS & RICHARDS, architects to the Association, 10 Queen Anne's Gate, Westminster, S.W. Quantities prepared by Messrs. ROBINSON & ROODS, quantity surveyors, 8 New Court, Carey Street, Lincoln's Inn, W.C.

Graham & Latham	£4,320	6	3
Smith & Sons	3,996	10	0
Hampton	3,698	0	0
Lole & Co.	3,663	0	0
Thomas & Edge	3,503	0	0
Jarman & Co.	3,446	0	0
Speechley & Smith	3,433	0	0
A. & B. Hanson	3,427	0	0
Soole & Son	3,420	0	0
Pasterfield & English	3,380	0	0
Williams	3,369	0	0
Gaze & Sons	3,363	0	0
Myall Bros.	3,245	0	0
Gathercole Bros.	3,215	0	0
GIBSON & CO., Finchley (accepted)	3,208	0	0
Fletcher	3,194	0	0

WALES.

For additions to Ffaldau Boys' Council School, Pontycymmer, Glam., for the Glamorgan Education Committee, under the supervision of Mr. D. PUGH-JONES, F.S.I., County Architect, Cardiff.

D. J. Davies & Co. £1,275 0 0

For the erection of a new infants' school at Nanthir, Glam., for the Glamorgan Education Committee, under the supervision of Mr. D. PUGH-JONES, F.S.I., County Architect, Cardiff.

D. J. Davies £4,221 5 0

For the erection of a new boys' school at Caerphilly, Glam., for the Glamorgan Education Committee, under the supervision of Mr. D. PUGH-JONES, F.S.I., County Architect, Cardiff.

John Williams, Abertridwr £4,599 18 0

For the reinstatement of Tonyrefail Council School, after fire. Mr. D. PUGH-JONES, F.S.I., County Architect, Cardiff.

David Davies £2,357 4 5

For preparing the concrete foundation and providing and laying jarrah or blackbutt hardwood blocks in Cowbridge Road between Severn Road and Market Road, for the Cardiff Corporation. Mr. W. HARPUR, city engineer, Cardiff.

Improved Wood Pavement Co. £2,455 7 3

Millar's Karri and Jarrah Co. (1902) 2,370 16 9

Acme Flooring and Paving Co. (1904) 2,339 11 4

Griffiths & Co., Ltd. 2,331 1 11

POMEROY & Co., Cardiff (accepted) 2,260 19 11

WALPOLE ST. PETER (NORFOLK).

For erection of house. Messrs. WALKER & WALKER, architects and surveyors, Wisbech, King's Lynn, and Terrington.

Bone £544 0 0

Reeder 487 0 0

Johnson & Son 484 0 0

Wilkinson & Son 479 0 0

Tash & Langley 475 0 0

Elworthy & Co. 473 0 0

Clarke 463 0 0

West 447 10 0

Barnes & Co. 434 0 0

RILETT, Lynn (accepted) 420 0 0

Holman 418 0 0

Eggleton 415 16 0

Horsley 367 10 0

WORTHING.

For erection of a school of art in Union Place, for the West Sussex and Chichester Joint Education Committee. Mr. H. P. ROBERTS, A.R.I.B.A., architect, Worthing.

School of Art.

W. Potter £2,530 0 0

Harwood 2,468 0 0

Peskett & Co. 2,425 0 0

Tier 2,400 0 0

Norman & Burt 2,386 0 0

Parsons & Sons 2,384 0 0

Rowland Bros. 2,353 0 0

Longley & Co. 2,348 0 0

Linfield & Sons 2,280 0 0

Cook & Sons 2,149 0 0

Sandell & Son 2,140 0 0

G. POTTER, Horsham (accepted) 2,119 0 0

Crane Bros. 1,794 0 0

Workshop.

Tier 220 0 0

Longley & Co. 215 0 0

Parsons & Sons 213 0 0

Linfield & Sons, Ltd. 210 0 0

Harwood 210 0 0

Norman & Burt 205 0 0

W. Potter 200 0 0

Peskett & Co. 199 0 0

Cook & Sons 195 0 0

Crane Bros. 195 0 0

Rowland Bros. 190 0 0

Sandell & Sons 185 0 0

G. POTTER (accepted) 184 0 0

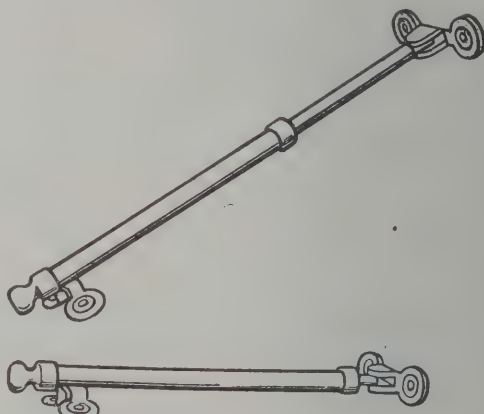
Architect's total estimate, 2,387l.

THE BUILDING TRADES EXHIBITION.

THIS week we conclude our references to the recent Building Trades Exhibition, Olympia, with descriptions of some of the stands which owing to pressure on space have had to be omitted in previous issues.

The Douglas Granite Co. were showing at the Art Pavements Co.'s stand some very fine Scotch granites, known as "Glencoe Grey," "Glencoe Red," and "Douglas Grey." The quarries from which the "Glencoe Grey" is obtained are on islands close to the shipping quay. One block recently quarried measured 14 feet by 8 feet by 6 feet, and weighed over fifty tons. In colour the material is regular and clean, free from stripes, clouds, and spots, and practically every stone is of the same tint. "Glencoe Red" is another granite being introduced on to the market which possesses very high qualities. It appears to be a very sound rock, rather larger in grain than Balmoral, but just as rich in colour. "Douglas Grey" is a stone of a bright blue-grey without veins or patchy markings. It takes an excellent polish and axes white. Some of the blocks are split with faces almost as clean as if they had been worked over with a tool.

Messrs. Coup, Phillips & Co., 5 Featherstone Buildings, High Holborn, W.C., showed two very ingenious devices in builders' ironmongery. One was the "Uneeda" self-adjusting casement stay, and the other the "Uneeda" self-locking bolt. The brass casement stay is worked on the principle of a piston or telescopic action; it is fastened at one end to the window-sill and at the other to the casement. To open the window the casement is pushed outwards to the desired position, and the stay is held firmly in that position without further fastening, even under a wind pressure of 25 lb. to the square foot. The casement may, however, be opened or



THE "UNEEDA" SELF-ADJUSTING CASEMENT STAY.

closed with very slight pressure. Demonstrations were given with such frequency as to prove that the mechanism will not get out of order by constant use. In their patent self-locking bolt, by lifting up the knob, a pin is drawn out of a hole in the back plate, and the shoot may be pushed home, when the pin again falls into a hole provided, and becomes locked. The locking action is ensured by the use of a small phosphor-bronze spring, which drives the pin into position directly the knob is released. The whole bolt is so constructed that there is no pressure between the shoot and the outer casing. The shoot has a tapered end, so that the bolt may be driven sufficiently far to be secured by the middle lock should the door have dropped.

"Metacon" adjustable steel shelving for libraries was displayed by the patentees, the Adjustable Shelving and Metal Construction Co., Ltd., who have their works at Willesden. It works on a ratchet principle, and is automatically adjustable. The shelves are interchangeable, and may be of varied depths and heights, so that there need be no waste of space between one row of books and the shelf immediately above. Continuous stacks may be formed by placing a series of the all-metal frames side by side as the necessity arises. The company have carried out many important installations, among these being the Royal Library, Berlin, London University, and the Library of the Royal Society, Burlington House, W. "Metacon" is also used for steel cupboards, lockers, drawers, &c.

Although with true artistic modesty it was content to let others jostle for the conspicuous positions, the exhibit of the Albany Forge, Ltd., 45 Goldhawk Road, W., at the far end of the hall was one calculated to excite in some visitors, at any rate, more enthusiasm than many miles of roofing felts, stoneware pipes, or even of high-class paints. It was a small general display of most pleasing wrought bronze and

wrought-ironwork executed recently at the forge, and included details from staircases, gates, &c.

Fireproof Doors, Ltd., 40 King William Street, E.C., showed several types of their "Dreadnought" doors. These have enjoyed a most successful career, and may be found in such important buildings as the Admiralty, Law Courts, Foreign Office, National Gallery, Victoria and Albert Museum, Imperial Institute, and Royal Naval Hospital. The "Dreadnought" doors passed through a searching test of the British Fire Prevention Committee with conspicuous success.

The Farringdon Works (H. Pontifex & Sons, Ltd.), Shoe Lane, E.C., had a very large assortment of porcelain enamelled baths, lavatories, sinks, closets, urinals, and general sanitary brass work.

The Counties Industries for Dorset and Hants, Burley, Hants, was founded by Lady A. Baker about three years ago in order to bring into prominence the unique and many-coloured clays of those two counties, which, on baking in a muffled kiln, produce some delightful effects in terra-cotta. The enterprise was at first quite experimental, but has now become established on a commercial basis. It is proposed to set aside 75 per cent. of the profits to enlarge the business and to divide 25 per cent. among the workers. On the stand was a striking Dorset hearth fireplace, another in "Dorset marble," made from veins of naturally-tinted clay, and an assortment of tiles and of other forms of terra-cotta.

Messrs. Campbell & Christmas, St. Oswald's Studios, S.W., touch on an architect's requirements at many points. On their stand they showed stained and leaded glass of delightfully fresh design, stained plate glass for roofs, a number of original coloured drawings for lunettes and frieze decoration, "Glasmure," opus sectile, and mosaic work, &c.

The Patent Waterproof Materials Co., Croydon, showed their rotproof and waterproof lining paper for underlining coverings on damp or new walls. Made in three colours (green, brown, and black), it is pasted and hung in the same way as ordinary wallpapers, and having a perfectly smooth surface, it may be painted or distempered if desired.

The Art Pavements and Decorations, Ltd., 7 Emerald Street, W.C., made a handsome display of British and foreign marble, mosaic, tiles, and parquetry. Marble work of every description is manufactured at their London works. Particularly striking were the four towering marble columns which form part of the work now being erected at the English and Scottish Law Life Offices. Another conspicuous specimen was a large polished slab in four pieces.

THE HUDSON BAY COMPANY are proposing to erect a large store at Winnipeg at a cost of about 410,000*l.*

PROVISIONAL plans have been drawn up for a new station on the L. and N.W. Railway at Ellesmere Port, to be erected on the site of the present shunting sidings on the west side of the old station. Extra sidings are contemplated for the convenience of the local ironworks. Increased railway facilities are called for chiefly through the developments of the Mersey Ironworks trade. A sum of 200,000*l.* is being spent in extensions and equipment with modern machinery. Several acres of land have been acquired in anticipation of further developments.

THE COURT of Common Council, at their last meeting, received a petition asking for a contribution to the fund for the completion of the Wellington Monument in St. Paul's Cathedral. The petition stated that a number of citizens had privately raised a fund to provide for the casting and erection of the equestrian figure of the Duke according to the original design, which had never been completed. The greater part of the money required had, it appeared, been collected, but a sum of 500*l.* was still needed. The subject was referred to the Coal and Corn and Finance Committee.

A TWO-LIGHT stained-glass window has recently been erected in the Lady chapel at St. Mary's Church, Albert Bridge Road, Battersea. The subjects are "The Presentation in the Temple" and "Christ among the Doctors." The window was designed and executed by Mr. H. G. Murray, of Britannia Studio, Caroline Street, S.W.

IN the Sculpture Gallery of the Royal Academy is a clever bust of the late King Edward VII. by Mr. Bruce Joy. This bust is intended for presentation to the British Chamber of Commerce, Paris, by its President, Mr. R. Walton, and will, as well as being a present to the British colony at Paris, serve to commemorate the reception in 1903 of the Directors of the Chamber by His late Majesty. The bust will be placed in the board room on a suitable pedestal being prepared by Mr. A. Vye Parminter, architect to H.M. Embassy, Paris.

THE INSTITUTION OF CIVIL ENGINEERS.

THE Council of the Institution of Civil Engineers have made the following awards for Papers read and discussed during the Session 1910-1911:—Telford Gold Medals to Mr. W. J. Wilgus (New York) and Mr. J. Walker Smith (Edinburgh); a George Stephenson Gold Medal to Mr. Philip Dawson (London); Telford Premiums to Messrs. G. W. Humphreys (London), H. K. G. Bamber (Greenhithe), A. E. Carey (London), William Dawson (Crewe) and C. S. R. Palmer (London); and the Trevithick Premium to Mr. A. T. Blackall (Reading).

The awards for Papers published in the Proceedings without discussion and for Students' Papers will be announced later.

At the annual general meeting of the Institution, held on April 25, the result of the ballot for the election of officers was declared as follows: President:—Dr. William Cawthorne Unwin (London); Vice-Presidents:—Mr. R. Elliott-Cooper (London), Mr. Anthony G. Lyster (Liverpool), Mr. B. Hall-Blyth (Edinburgh), and Mr. John Strain (Glasgow); other Members of Council:—Mr. John A. F. Aspinall (Liverpool), Mr. John A. Brodie (Liverpool), Mr. William B. Bryan (London), Col. R. E. B. Crompton, C.B. (London), Mr. Wm. Davidson (Australasia), Mr. James M. Dobson (London), Mr. H. F. Donaldson, C.B. (London), Mr. E. B. Ellington (London), Mr. Maurice Fitzmaurice, C.M.G. (London), Mr. J. P. Griffith (Ireland), Dr. Charles A. Harrison (Newcastle-on-Tyne), Mr. Walter Hunter (London), Mr. G. R. Jebb (Birmingham), Mr. Harry E. Jones (London), Mr. E. H. Keating (Canada), Sir Wm. Thos. Lewis, Bart., K.C.V.O. (Aberdare), Sir Thomas Matthews (London), Mr. Wm. Henry Maw (London), Hon. C. A. Parsons, C.B. (Wylam-on-Tyne), Mr. F. E. Robertson, C.I.E. (London), Mr. Alexander Ross (London), Mr. J. W. Shores, C.M.G. (South Africa), Hon. F. J. E. Spring, C.I.E. (India), Sir Philip Watts, K.C.B. (London), Mr. W. B. Worthington (Derby), and Mr. A. F. Yarrow (Glasgow). This Council will take office on the first Tuesday in November, 1911.

THE Chester Town Council give notice of their intention to provide a school for about 150 children at Neston.

THE Chertsey Rural District Council have decided to provide houses for the working classes, as ordered by the Local Government Board, in the parish of Thorpe.

THE Drapers' Company have voted 6,000*l.* to the Battersea Polytechnic for the erection and equipment of a department of hygiene and physiology.

A NEW church hall for which plans have been passed will shortly be erected in connection with the parish church at Kilwinning, N.B., at a cost of about 2,000*l.*

AN appeal has been made for contributions towards the 12,000*l.* required for erecting new buildings at Ruskin College, Oxford.

MR. C. F. GETTINGS, surveyor to the Teignmouth Urban District Council, has been selected out of 118 applicants for the post of county road surveyor for Worcestershire. The salary is 450*l.* per annum.

THE Reading Borough Surveyor has prepared plans and sections of an open-air bathing place proposed to be erected at Coley at an estimated cost of 1,800*l.*

MESSRS. HOMER & LUCAS, architects, 35 Bucklersbury, E.C., have prepared the necessary plans for the offices and club (Playgoers') now in course of erection over Leicester Square (Tube) Station. The contract was let to Mr. F. W. Dunkley, builder, Barnes.

MESSRS. R. MACDONALD & Co., contractors, of Bombay and Calcutta, have been awarded the contract for rebuilding the Grand Oriental Hotel in Colombo in three sections. The firm has taken offices in the Victoria Arcade, Colombo.

AN extensive enlargement scheme is to be carried out shortly at the Caledonian house of Messrs. Copland & Lye, Sauchiehall Street, Glasgow. The plans, which have been passed by the Dean of Guild Court, show a new building of six storeys in Bath Street, representing together an addition of 11,000 square feet to the existing floorage.

THE Newcastle Education Committee have decided to obtain in a local competition plans for the proposed school at Walker Gate. The school is to consist of two departments (350 senior mixed and 300 juniors, with an infants' class attached), and the accommodation of the various class-rooms is to be for 55 in the senior and junior departments, and 50 in the infants' department.

THE PROTECTION OF WATER SUPPLIES.

At a meeting on Monday, May 1, of the Society of Engineers (Incorporated), a paper entitled "The Protection of Water Supplies" was read by Mr. H. C. H. Shenton, vice-president.

The paper dealt with the difficulties of deciding on standards of purity for water and of danger from pollution. Dr. Somerville's and Dr. Thresh's warnings as to the harmfulness of certain organisms other than those usually taken into account were quoted, and Dr. Russell McLean's warnings against the harmfulness of coli, Dr. Sims Woodhead's statement as to the impurity of chalk waters, Dr. McWeeney's coli standard, Dr. Ridell's comments on the coli standard, Dr. Houston's object in the purification of London water supplies, and Mr. Dibdin's statements with regard to coli were discussed.

The author stated that animal pollution was sometimes considered harmless, without any apparent justification, and Mr. Downs's conclusions as to the harmlessness of farmyard pollution were given as an instance. Mr. Revell's opinion as to the relative unimportance of chemical and bacteriological tests for water was discussed, and the possible harmfulness of an absolutely sterile water was illustrated by Sir John Moore's statement at Dublin as to the nutritive value of certain bacteria in water, and by an instance of illness supposed to have been caused by the consumption of distilled water.

The pollution of supplies had been demonstrated recently by a great many authorities, including Mr. Baldwin Latham, who had drawn attention once again to the fact that typhoid germs could exist in the ground, a fact which had been proved by Dr. Robinson's experiments, which were confirmed by Dr. Sidney Martin, of the L.G.B. The author stated that Dr. J. W. Miller's paper on the Dangerous Pollution of Rivers was confirmed by the serious warning of the Joint Committee of both Houses of Parliament on the Water Supplies Protection Bill.

Statistics published by the New York State Department of Health proved that cities which had improved their water supplies during a period of ten years showed a typhoid death-rate considerably diminished, while those which had not improved their water supplies during the same period showed no change in the typhoid death-rate.

In the author's opinion, standards could not be adopted that would ensure safety from all possible dangers, *including unknown causes*, but standards could be adopted that would exclude such germs as were known to be harmful. For the rest, a risk must be accepted or ignored till the existence of anything harmful in the water was proved or disproved by the scientist. Such standards should be rigidly enforced. If the scientist would fix such a standard, the engineer could make water conform to it. The author also stated that the fact that waters could be purified did not afford any excuse for permitting pollution to occur. All possible sources of pollution should be excluded, or purified so as to be harmless where exclusion was impossible. Engineers could do away with all sources of danger as required by constructing new and better works of various kinds, but these must be of a character superior to what was now generally accepted. To do away with the sources of pollution would prove less expensive in the end than the present acquiescence in the construction or use of leaking sewers, house connections, drains, cesspits, and the like in places where pollution of the underground water supply was possible.

JACKSON SELF-FEEDING WATER BOILER PATENT.

In the Chancery Division, before Mr. Justice Joyce on Wednesday, May 10, the action of Jackson Boilers, Ltd., Queen's Square, Leeds, *v.* Fourness Lamp Co. was heard. Mr. A. J. Walter, K.C., and Mr. Hunter Gray appeared for the plaintiffs. Mr. Hunter Gray stated that the action was one for infringement of the plaintiffs' patent for water boilers. He explained that by the plaintiffs' invention boiling water could be obtained in the shortest possible time by reason of the ingenious arrangement of the interior parts of the boiler, and that a further advantage of the patent was that the apparatus could be readily cleaned out without any disturbance of the parts, and thus it was very suitable for use with hard water where it was likely that there would be any deposit. The Judge remarked that that was a very material advantage in any hot-water apparatus.

The defendants had shortly before the hearing intimated that they were not going to contest the case and had agreed

to pay damages and costs, but the plaintiffs contended that they were entitled to an order of the Court that the validity of the patent having been in question in the action the Court should grant a certificate of validity.

Mr. Atkinson Adam, C.E., explained the operation of the boiler. In his opinion it was a good invention and that there was no anticipation whatever in the cases set up upon the defendants' pleadings. In his opinion it was a valid and good patent. He explained at length to the Judge the working of the boiler, and his Lordship carefully examined the plaintiffs' patent with the infringement of the defendants.

Mr. Jackson, the patentee, was called, and at the close of the evidence Mr. Hunter Gray submitted that he was entitled to a certificate of validity of the patent as well as to an injunction.

His Lordship made the order granting an injunction against the defendants and also a certificate of the validity of the patent.

THE SOCIETY OF ENGINEERS (INCORPORATED).

By permission of the Council of the Festival of Empire, a party of members of the Society of Engineers (Incorporated) and their friends, numbering nearly 100, visited the Crystal Palace on Saturday, May 6, to inspect the building works in progress. Mr. Burnard Geen, A.M.I.C.E., M.S.E., consulting engineer to the Council, explained the chief points of interest. The visitors were first shown the two new reinforced concrete staircases leading from the main floor level of the centre transepts to the first terrace. The surface of all steps and landings is finished with 1 in. granolithic, put on at the same time as the main body of concrete. The hand-mixed concrete was composed of washed shingle varying in size from $\frac{3}{4}$ inch to $\frac{1}{2}$ inch, washed sand of a sharp nature, varying in size from $\frac{1}{8}$ inch downward, and Portland cement, in the proportions of 27 cubic feet of shingle to $13\frac{1}{2}$ cubic feet of sand to $6\frac{1}{2}$ cwt. of cement. The whole of the work, consisting of some 325 cubic yards of concrete, was completed in about 11 weeks.

The next work of interest was the strengthening to the existing roof of the Indian Section, a polygonal-shaped building of sixteen sides. The existing iron domed roof, with a fixed span of 123 feet 6 inches and a rise of 27 feet, built thirty years ago, was found to be in bad repair, and in order to carry the new false dome of fibrous plaster, supported on timber framework, which it was decided to add, it was necessary to truss the existing ribs. Scaffolding was erected from below, and the closing members of the new steel trusses were put in with initial tension, so as to relieve the existing ribs of dome action and convert them into compression members of the new trusses.

At the main entrance to this building there is a drop of no less than 10 feet, which has been got over by a flight of thirteen steps leading down to a raised platform 3 feet 6 inches high above the main floor of the building, 12 feet wide and 60 feet long, with a further seven steps at each side, thus converting a serious difficulty into a feature of the building.

Passing out into the grounds again the party had a good view of the various features of the exhibition, and inspected the buildings for housing the exhibits from South Africa, New Zealand, and Australia. These latter buildings are models to three-quarter full size of the parliament houses of the respective Colonies, and have an area collectively of about 6,500 super yards. They are constructed of timber covered with fibrous plaster, painted so as to take the appearance as far as possible of the stonework of which the originals are constructed.

After seeing the various other attractions of the Exhibition, tea was served in the Palace, and ended a very enjoyable and instructive visit.

The South Shields Town Council are going to apply to the Local Government Board for power to make the water-carriage system compulsory in all new buildings from January 1 next.

Mr. EDWARD MANSELL, of Temple Row, and Mr. Gerald Fowler, of Waterloo Street, have been re-elected diocesan surveyors of dilapidations for a period of three years for Birmingham.

An understanding has been arrived at between the brick manufacturers of Kent and Peterborough under which the output will in future be so regulated as to approximate more nearly to the actual demand for bricks by the building trade, so avoiding the financial losses occasioned by over-production.

THE HYGIENIC ASPECTS OF ILLUMINATION AND RECENT PROGRESS IN ILLUMINATING ENGINEERING.

(Continued from April 28.)

Invisible Radiation—Ultra-Violet Light.

WE know that artificial illuminants emit rays which are not visible but have, nevertheless, a profound effect upon us. We are conscious of the heat rays of the sun-rays of too low a frequency to appeal to the eye as visible light. We now know also that there are rays at the other end of the spectrum, beyond the violet, which affect the photographic plate, and are not without influence upon the human body; it is these rays that are now regarded as responsible for sun-burn. It is also these rays which are believed to cause the marking in smallpox and fading away of colours. In connection with their effect in imprinting the scars of smallpox on the skin, it is very interesting to learn that right back in the middle ages red curtains were popularly supposed to make the marking less. But it was only the researches of Finsen that enabled us to appreciate the reason, namely, that such curtains absorb the ultra-violet rays.

These rays are also believed to have a powerful action on the eyes when present in excess. The severe inflammation following incautious exposure to the naked arc light, the snow-blindness which occurs in mountainous districts where the light received is rich in ultra-violet rays, even the formation of cataract in the eyes of glass-workers constantly exposed to the radiation of molten material have been ascribed to their action.

A considerable amount of work on this subject has been done by the joint efforts of Dr. K. Stockhausen, an engineer, and Dr. F. Schanz, an oculist in Dresden. These observations have drawn attention to the fact that our artificial illuminants of the present day contain an increased amount of ultra-violet energy, and have, as a result of their researches, formed the opinion that, in excess, it is undoubtedly prejudicial to vision, and that certain fatiguing effects of artificial light are to be ascribed to this cause. They point out also that the rays can be divided into several distinct classes, and that ordinary glass does not absorb some of them. They have, therefore, devised a special variety of glass which they term "Euphos," which is specially adapted to absorb these rays. Spectacles of this glass are made for special use in snowy districts, or for the use of those engaged in work with intensely bright sources.

While, however, the pressure of an excessive amount of ultra-violet light is believed to have these prejudicial effects, it is also known that these very rays are serviceable in destroying bacteria. It would, therefore, presumably be rash to recommend their total exclusion from the spectrum of illuminants. But we require the physiologist to tell us how much or how little of this kind of energy is desirable for ordinary purposes. On the other hand, for special applications, such as the treatment of skin diseases, the sterilisation of material, &c., they are said to have already proved their utility. It may be suggested that there is still much to be learned regarding the effects of such invisible radiation in daily life. It is believed, for example, that the access of daylight into interiors is very beneficial in preventing the accumulation of microbes and the development of unhealthy conditions. How far is this effect to be ascribed to the influence of ultra-violet radiation, and how far to the natural effect of visible rays? Again, we know that the habit of constantly keeping windows shut is unhygienic because it leads to the gradual accumulation of impurities in the confined air. But it has been suggested that there is another and quite distinct reason why open windows should be encouraged. Ordinary window glass, while allowing visible radiation to pass almost unaffected, absorbs a considerable amount of ultra-violet energy; indeed, is said to suppress the rays of shortest wave-length altogether. May we not, therefore, regard this as another possible argument in favour of open windows? but no draughts! Here, again, we find an instance of the close connection between the need for abundant supplies of fresh air and the necessity for providing adequate illumination. In general, access of daylight and admittance of fresh air are closely connected.

Ventilation and Artificial Lights, &c.

This leads me to make passing reference to another line of work that has recently received a considerable amount of attention, namely, the connection between ventilation and the effect of the products of combustion of open flames, gas burners and stoves, &c., on the ventilation. Experiments on these points have been made, but the views expressed by

different authorities seem inconsistent in some respects, and further confirmation would be desirable.

It may be observed, for example, that a very complete and interesting series of researches was carried out by Dr. S. Rideal, and published in the Journal of the Royal Sanitary Institute in 1908, on the effect of products of combustion of various kinds on frequency of pulse and respiration, richness of blood in coloured corpuscles, body temperature, mental fatigue, &c., and has provided a most interesting and suggestive record of the possible lines of research in this direction. The questions he studied may be said to have never, apparently, been thoroughly threshed out, and one would like to see confirmatory tests carried out, especially in view of the well-recognised need for repetition of result in physiological study.

The effect of the heat and infra red rays of illuminants has also been the subject of study, but here, again, one feels that in order to be able to speak with certainty, more complete confirmatory investigations would be desirable.

Quite recently some tests on the effects of products of combustion have also been carried out by Dr. Toogood, at the Lewisham Infirmary, and it is interesting to observe that in 1908 a special grant was made to Dr. W. Wade for the purpose of carrying out researches on the same point.

Such experiments have certainly added to our knowledge of the subject. At the same time, it may be suggested that in the case of physiological researches of this kind experiments on a large number of individuals are desirable, and that the repetition of experiments by various observers is also very necessary. It is to be noted, also, that in order to carry the necessary weight such tests should be conducted under circumstances that leave no doubt as to their impartiality. The matter is mentioned merely as an instance of another line of work in which co-operation between the lighting engineer and the physiologist would be very beneficial, and on which reliable and impartial tests would still be welcome. There are also many other questions connected with the hygiene of illumination which might profitably be made the subject of similar investigations.

It might be added that one point which has not always received as much attention as one would desire in such experiments has been the measurement of the actual illumination in the case of the illuminants studied. This leads me to my next section on the value of measurements of illumination.

In illuminating engineering, as in other branches of work, it is most essential to have at one's command simple and reliable methods of measurement, the more so as many different experts are interested in the matter and desire to make tests, but cannot be bothered with cumbrous or complicated apparatus.

(To be concluded.)

TRADE NOTES.

WE are asked to notify that Messrs. Cockayne & Co., Ltd., of 185 Walworth Road, S.E., are now issuing a second edition of Oxborrow's Combined Order, Prime Cost, Charges to Customers, and Summary Book. To obtain for this practical account book a wide circulation, and to enable every trader carrying out repairs and jobbing work the opportunity of testing its merits at a trivial outlay, the publishers will supply at a charge of 1s. (post free 1s. 3d.), a specimen copy containing 50 pages of rulings, printed instructions, and a worked-out example. Builders, decorators, plumbers, engineers, manufacturers and others can profitably utilise this simple, economical and perfect method for accurately ascertaining their outlay, and also for fixing equitable charges in connection with their customers' orders.

WENGERS, LTD., Etruria, Stoke-on-Trent, have issued a well-printed wall calendar. As manufacturers of colours, chemicals, and all requisites for potters, glassmakers, and enamellers on metal, they have pinned on to the cord above it a series of colour cards, with names and numbers to assist customers when posting their orders.

THE annual dinner of the Society of Engineers (Incorporated) is to be held at the Criterion Restaurant on Saturday, May 27. Mr. F. G. Bloyd, the President, will be in the chair, and the guests will include Mr. Alexander Siemens, President Institution of Civil Engineers, Mr. E. B. Ellington, President Institution of Mechanical Engineers, Prof. C. Vernon Boys, F.R.S., Sir David Gill, and others. After the dinner there will be a conversazione and concert, the musical programme having been arranged by Mr. Chas. Capper, who will contribute some of his whistling solos.

LAND UNION JOURNAL.

Two years have passed since the Chancellor of the Exchequer, in his Budget speech of April 29, 1909, foreshadowed the principles involved in the Finance Act of 1910. It is probably safe to say that no more intricate and difficult piece of legislation has ever had to be dealt with by the people of the United Kingdom. The valuation of the whole of the land of the country would, in its simplest form, be a herculean task, but the magnitude of the enterprise has been augmented by the intricate rules and definitions and the absolute unreality of the whole conception of "site-value," which is the basis of the system.

The Land Union, on the 1st of May, published the first number of its Journal, one of the principal objects of which is to give assistance and advice to owners and their agents in connection with the valuation.

The Journal will be conducted on non-party lines. The subject being in its very essence political, it will be impossible to avoid politics in the broad sense of the word, but the distinction between political and party treatment will be carefully maintained.

The Journal will also deal with other important questions connected with the ownership of land and house property. The relations between local and Imperial finance and the reform of the present system of rating are matters which will inevitably demand considerable public attention in the near future. The principles involved and the legislation proposed will be discussed.

The May number contains articles by Mr. E. G. Pretymann and Mr. Harold Cox. Debates in the House of Commons will be dealt with by Mr. Crofton Black.

The Supplement to the May number reprints the Land Clauses of the new Revenue Act, 1911, with notes, and also the Statutory Rules and Orders which have been issued by the Reference Committee dealing with appeals to referees.

The Journal will be the official organ of the Land Union, but it is certain that it will prove of interest and utility to a larger circle than the members of that association and that all those who are interested in land and land legislation, whether in a private or official capacity, will be numbered amongst its subscribers.

VARIETIES.

A COMPLETE scheme is to be prepared for the extension of the eastern end of the esplanade at Penzance, at a probable cost of 14,000*l*.

THE Local Government Board have sanctioned the borrowing of 6,400*l*. by the South Bank (near Middlesbrough) Council for the erection of a Town Hall.

THE Star Theatre, Liverpool, has been acquired for the purpose of converting it into a permanent repertory theatre. Very considerable reconstruction will be necessary, and the necessary plans have been prepared by Professor S. D. Adshead, Liverpool.

A COMMITTEE was appointed on Monday to promote the completion of St. Mary's Episcopal Cathedral, Edinburgh, by the erection of the two western spires as a memorial to the two Misses Walker. These ladies practically built and endowed the cathedral in 1871. It is believed that a sum of 15,000*l*. will be required.

THE Leith School Board have resolved to request Mr. Geo. Craig, architect, Leith, to submit a plan showing how an elementary school could be erected on the topmost portion of the ground recently acquired by the Board from the Parish Council at North Junction Street, extending to about 1½ acres.

THE Governors of the Royal Caledonian Asylum propose to complete the new building by adding a dormitory at each end, and providing accommodation for at least 200 children; and to erect workshops for the teaching of trades. The scheme is to be as a Coronation memorial.

THE Dundee Town Council propose to give a sum not exceeding 4,000*l*., together with a site, for the erection of a new church in the west end for St. John's Cross congregation. The cost of the church and church halls is estimated at 10,000*l*.

At the annual meeting of the Visitors of the Bracebridge County Asylum, the Building and Sanitary Committee reported that the continuous increase in patients pointed to the necessity of providing more accommodation by additional wings. Plans had been submitted for the accommodation of sixty male and 100 female patients.

Two new large theatres are to be erected in Manchester very shortly. One will be the "New Queen's" Theatre, and an island site has been secured in Great Bridgewater Street

within a few yards of Oxford Street. The other is to be built in Quay Street, a few yards away from Deansgate. The site available has an area of about 1,800 square yards. The estimated cost of the theatre, exclusive of the site, is a little under 30,000*l*.

THE Worshipful Company of Makers of Playing Cards offers the Company's prize of 15*l*. 15*s*. for the best design for the backs of playing cards, illustrating the subject of "India, the Imperial diadem." The "H. D. Phillips" prize of 10*l*. 10*s*. is also offered by the Company for the best design on any other subject than that mentioned above, or of any pattern at the choice of the competitor. Designs must be sent in by June 30.

THE Dudley Education Committee last month invited architects practising within eight miles of Dudley (including the area of the city of Birmingham) to send in their names as competing architects for a school to be erected at a cost of about 5,000*l*., at Netherton. Thirty-five applications were received. It has been decided that twelve of these will be invited to submit competitive plans. Mr. C. Smith, F.R.I.B.A., Reading, will act as assessor.

HIS MAJESTY'S Acting Consul-General at Leipzig reports that a Portland cement factory, with an annual capacity of 1,000,000 barrels of cement, is to be erected at Sättelstad. An assurance has been issued that the new concern will immediately join the Central German Cement Association, but, says the Acting Consul-General, it is almost certain that the establishment of this new factory will make the already unsatisfactory price and market conditions in the German cement trade even worse.

DURING the past three years the imports of cement into San Francisco have rapidly declined, and according to his Majesty's Consul-General at San Francisco, it is thought to be only a question of a few years when they will cease entirely. The number of barrels imported last year was 23,448, as compared with 151,097 barrels in 1908. The decline in the importations from the United Kingdom is very marked, none being registered last year, as against 2,255 barrels in 1909 and 13,785 barrels in 1908. The local manufacturers are now more than able to meet all requirements.

THE Edinburgh Dean of Guild Court have granted warrant to erect a new school at M'Leod Street, Tynecastle. The main building will accommodate 960 pupils, and have twenty-four class-rooms. The building is L-shaped, and is so planned that only a class-room and a corridor comprise the width of the building. On the ground floor there is a central hall 80 feet by 40 feet. In addition, spray baths will be provided for both sexes. The grounds extend to 3½ acres. The total cost of the building will be about 17,000*l*. The architect is Mr. J. A. Carfrae, 3 Queen Street, Edinburgh.

At a meeting of the Northern and Yorkshire divisions of the Institution of Municipal Engineers on the 6th inst., it was decided to appoint a special sub-committee to consider the question of the alleged unsatisfactory attitude of the Local Government Board towards the engineer. Mr. Davison (Chairman of the Northern Division), of Morpeth, who presided, said the tendency of the Local Government Board for some time past had been to ignore the surveyors very largely. The present President of the Local Government Board seemed to favour the health officers against the surveyors, and they had some glaring examples of this.

On the 3rd inst. a meeting of workers in the building trades of Leeds was held in the Kingston Unity Hall, with a view to trying to incorporate the whole of the various branches of the many building trade unions into one federation. Mr. J. Smith, District Chairman of the Amalgamated Carpenters and Joiners, presided, and the meeting was addressed by Mr. P. Flanagan, of Hull, Mr. H. A. Stone, Mr. W. Hirst, and Mr. Bradshaw. A resolution was passed pledging those present to use every endeavour to strengthen each society by securing the admission of every eligible candidate in their respective trades, and to bring about the industrial federation of all branches of the building trade.

THE Durham County Council held their annual meeting last week. The seal of the Council was affixed to contracts for new schools at Benfieldside (cost, 3,562*l*.), Deaf Hill (5,869*l*.), Horden Temporary (1,352*l*.), and for alterations at Crook (2,040*l*.), Eldon (1,646*l*.), and other schools. The purchase of six acres of land at Houghton-le-Spring for 3,500*l*. for a secondary school and higher standard school was agreed to. Amongst other places at which new schools, or extensive alterations, were proposed were Black Boy (estimated cost, 4,930*l*.), Byers Green (1,450*l*.), Dunston Hill (4,000*l*.) East Hetton (2,396*l*.), Fatfield (5,625*l*.), Helmington Row (2,650*l*.), Newbottle (3,484*l*.), Newton Cap (3,772*l*.), Peases West (3,217*l*.), Sacriston (975*l*.), Stanley, near Crook (2,250*l*.), and Tursdale (2,395*l*.).

THE Architect and Contract Reporter.

FRIDAY, MAY 26, 1911.

Published weekly, subscription 19s. per annum for Great Britain, and for Colonial and Foreign subscriptions £1 6s. 6d. All business communications to the Managing Director,

P. A. GILBERT WOOD,

Publishing Offices, 6-11 Imperial Buildings, Ludgate Circus, London, England.

Telephone No. 4725 Holborn.

Branch Offices at 43 OLD QUEEN STREET, S.W., Messrs. W. HAY FIELDING & CO. being the representatives for all business purposes.

The Birmingham Offices are at 102 COLMORE ROW.

* Entered in the United States of America as second-class matter.

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EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit the insertion of lengthy communications.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

* * As great disappointment is frequently expressed at the nonappearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

ATHENS.—Sept. 25.—An international competition of plans is invited by the Greek Ministry of the Interior (Public Works) for the erection of a Court of Justice at Athens. The cost of the building must not exceed 160,000l. A first prize of 800l., and a second prize of 320l. will be awarded. The Greek Official Gazette, containing particulars (in Greek and in French) may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

BRADFORD.—June 1.—The Board of Management of the Bradford Infirmary invite plans with estimates for a new infirmary in Duckworth Lane. Mr. Keith D. Young, F.R.I.B.A., will act as assessor. Deposit 3l. 3s., which will be refunded on receipt of a bona-fide design or if block plan, instructions, &c., are returned within a month after receipt of replies to competitors' questions. The Secretary Superintendent of the Royal Infirmary, Bradford. (For further particulars see advertisement, January 13.)

NORTHAMPTON.—July 7.—The Borough Education Committee invite architects practising in the borough or county of Northampton to submit on the 7th July plans for a secondary school for girls, to be erected in St. George's Avenue. A plan of the site and a copy of the instructions containing the terms and conditions of the competition may be obtained from Mr. Stewart Beattie, Secretary, Education Offices, 4 St. Giles's Street, Northampton.

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NORWICH.—June 2.—The Royal Agricultural Society offer prizes for plans of house and buildings containing accommodation suitable for a mixed farm not exceeding 50 acres in extent: First prize, 25*l.*; second prize, 15*l.*; third prize, 10*l.*; fourth prize, 5*l.*, for the Royal Agricultural Society of England Show at Norwich, June 26 to 30. Entries close June 2. Mr. T. McRow, Secretary, 16 Bedford Square, London, W.C.

WALES.—June 16.—The Cymmer Co-operative Society, Ltd., invite competitive designs for rebuilding business premises at Cymmer, Port Talbot. Deposit 5*s.* Premiums of 15*l.* and 5*l.* will be awarded to plans first and second in order of merit respectively. The Secretary, Co-operative Society, Cymmer, Port Talbot, Glamorgan.

WALES.—July 1.—Competitive designs are invited for chapel, schoolroom, and classrooms to be erected at the junction of St. Alban's Road and Finsbury Terrace, Swansea. Particulars and conditions may be obtained from the Secretary, Mr. D. Walters, 19 Brooklands Terrace, Swansea.

WHITLEY BAY.—June 7.—The Whitley and Monk-seaton Urban District Council invite architects practising in Northumberland and the city of Newcastle-upon-Tyne to submit designs for the proposed cemetery buildings. A professional assessor has been nominated by the President of the R.I.B.A. to assist in drawing up the conditions and to advise on the relative merits of the various designs. The site-plan and the conditions can be obtained on a written application being made, accompanied by a deposit of 1*l.* 1*s.*, which will be returned to every competitor submitting a bona-fide design. The designs, addressed to the Surveyor, are to be delivered at the Council Offices, Whitley Bay, on or before June 7. Apply to Mr. Augustus Whitehorn, Clerk to the Council, 60 Saville Street, North Shields.

YEovil.—The Corporation of Yeovil invite competitive designs as follows:—(1) For laying out a site of about 10 acres of land for the purpose of erecting houses for the working class, and (2) for houses to be erected thereon. In respect of each class of design premiums of 20*l.* and 10*l.* will be awarded. Particulars and conditions of site may be obtained upon deposit of 10*s.* 6*d.* from the Town Clerk, Yeovil.

CONTRACTS OPEN.

AISKEW.—June 16.—For erection of a cottage at Aiskew, near Bedale. Apply by June 3 to Mr. T. Linscott, Wycar, Bedale.

AYLESBURY.—June 7.—For alterations to the infirmary at the Union House. Deposit 5*l.* Bank of England note. Mr. F. Taylor, A.R.I.B.A., 7 Bourbon Street, Aylesbury.

BARNARD CASTLE.—June 5.—For the following work at the Auction Mart, viz.: Contract No. 1, cementing and draining; (2) iron pens and stalls; (3) iron roof. Mr. E. C. Surtees, architect, 4 Park Terrace, Barnard Castle, Durham.

BASINGSTOKE.—June 12.—For erection of a new secondary school for 160 girls. Deposit 5*l.* 5*s.* Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

BELFAST.—For erection and completion of offices, Board-room, and stores, York Road, for the Belfast Mineral Water Co., Ltd. Messrs. Moore & Flanagan, architects, 35 Royal Avenue, Belfast.

BEVERLEY.—For pulling down and reconstruction of shop premises in Market Place, for Messrs. A. Altham, Ltd. Send names to Mr. F. Mason, architect, 20 Park Road, Leeds.

BIGGLESWADE.—June 6.—For alterations and additions to the infirmary at the workhouse. Deposit 1*l.* 1*s.* Mr. W. Jackson, architect, Market Square, Biggleswade.

BOLTON.—June 2.—For the separate trades in erection of the Hardcastle Memorial Hall, St. Augustine's, Tonge Moor. Mr. Ernest W. Dyson, architect, 17 Lee Lane, Horwich.

BURY.—May 29.—For erection and completion of a new entrance lodge at the Bury Infirmary. Messrs. Nuttall & Cooper, architects and surveyors, Market Street, Bury, Lancs.

CALLINGTON.—June 10.—For erecting a Council school at Callington. The Council School, Callington, or Mr. B. C. Andrew, architect, St. Austell.

CRANBROOK.—May 30.—For alterations at the workhouse infirmary. Mr. C. Payne, surveyor, Cranbrook, Kent.

CUMBERLAND.—May 30.—For the erection of a dwelling-house at Hayton, Cumberland, for Mr. W. E. Dover. Mr. J. Henney, architect and surveyor, 39 Senhouse Street, Maryport.

DORCHESTER.—May 31.—The Guardians invite separate tenders for—(1) alterations to the porter's quarters at the workhouse, and (2) for repairs to porter's lodge, near the entrance gates. Mr. H. Wilton Reed, clerk, 24 High West Street, Dorchester.

DRUMBURGH.—June 10.—For the whole of the work required in alterations and additions to Drumburgh Council school, Cumberland. Mr. J. Forster, M.S.A., 13 Earl Street, Carlisle.

EDINBURGH.—May 29.—For the carrying out of the following works in connection with the erection of Tollcross School, Fountainbridge, for the School Board, viz.:—(1) Mason and brick works; (2) carpenter and joiner works; (3) steel and iron works; (4) slater work; (5) plaster work; (6) glazier work; (7) plumber work; (8) painter work. Mr. J. A. Carfrae, architect, 3 Queen Street, Edinburgh.

EDINBURGH.—June 3.—For the various trades in connection with erection of a training college for teachers at Moray House. Deposit 3*l.* 3*s.* Mr. A. K. Robertson, architect, 29 Hanover Street, Edinburgh.

EDINBURGH.—June 12.—For carrying out the following works in connection with the erection of Boroughmuir (New) school, Viewforth, for the School Board, viz.: (1) Mason and brick works; (2) carpenter and joiner works; (3) smith and ironfounder works; (4) slater works; (5) plaster work; (6) glazier work; (7) tile work; (8) plumber work; (9) painter work. Mr. J. A. Carfrae, architect, 3 Queen Street, Edinburgh.

FAENWORTH.—June 3.—For erection of an elementary school for 878 children, in Queen Street. Deposit 3*l.* 3*s.* Mr. Frank Freeman, architect, 13 Bowker's Row, Bolton.

GLASGOW.—May 30.—For erection and completion of houses. Mr. J. Earnshaw, architect, Carlton House, Bridlington.

GLASGOW.—May 31.—Constructional schemes and tenders are invited for the erection of the reinforced concrete floors, roofs, beams, columns, staircases, &c., in connection with the extension of Glasgow head post office. Any system or systems of construction may be adopted for the whole or any part of the work. Deposit 3*l.* 3*s.* H.M. Office of Works, 3 Parliament Square, Edinburgh, or at H.M. Office of Works, G.P.O., Glasgow.

GLASGOW.—June 26.—For the construction of a granary at Meadowside, Partick, for the trustees of the Clyde Navigation. The granary to be 312 ft. long by 72 ft. wide, inside dimensions, and 14 storeys in height. The building to comprise two portions, viz., grain bins or silos to contain 20,000 tons of grain, and floor warehouse to store 11,000 tons of grain. Tenders are to be for the construction of the granary in the following methods, viz.: (a) Entire building of reinforced concrete; (b) entire building of reinforced concrete, but with brickwork facing the external walls; (c) silos of reinforced concrete with external walls faced with brickwork; floor warehouse having external walls of brickwork, internal columns of cast-iron, and floors of rolled steel beams and concrete. Tenderers may offer for one or more of the alternative systems of construction. Send 5*l.* deposit to the Trustees' Engineer, Mr. T. R. Mackenzie, general manager and secretary, 16 Robertson Street, Glasgow.

GREAT YARMOUTH.—May 29.—For erection of stabling for fifty horses on the racecourse, South Denes. Mr. J. W. Cockrill, M.I.C.E., borough surveyor, Town Hall, Great Yarmouth.

HARRINGTON LOWCA.—June 3.—For the whole of the work required to be done in connection with proposed alterations and additions to Harrington Lowca Council School, for the Cumberland Education Committee. Mr. J. Forster, M.S.A., architect, 13 Earl Street, Carlisle, or Mr. Tolson, School Offices, Harrington.

HELLINGLY.—May 29.—For new Council elementary school at Hellingly, East Sussex. Send names and addresses by May 29 to Mr. F. J. Wood, county surveyor, County Hall, Lewes.

IRELAND.—June 9.—For erection of a dispensary residence and dispensary at Corbally, Downpatrick. Deposit 2*l.* 2*s.* The Boardroom, Workhouse, Downpatrick.

ISLE OF MAN.—June 1.—For the erection of a large concert-hall and other buildings, together with laying out grounds, &c., at the Villa Marina Estate. Send names and 2*l.* 2*s.* deposit by June 1 to Mr. A. Robertson, Town Clerk, Town Hall, Douglas, Isle of Man.

KING'S HEATH.—June 14.—For the erection of a superintendent's lodge in the King's Heath Park, Birmingham. Deposit 1*l.* 1*s.* Mr. A. W. Cross, engineer and surveyor, 23 Valentine Road, King's Heath, Birmingham.

LAUNCESTON.—June 10.—For erecting a Council school. The Council School, Launceston, or Mr. B. C. Andrew, architect to the Committee, Biddick's Court, St. Austell.

LEEDS.—May 29.—For the reinstatement of 53 Burman-tofts Street, recently damaged by fire, for the Corporation. Mr. W. T. Lancashire, City Engineer, Municipal Buildings, Leeds.

LONDON.—May 31.—For erection of a small hall for St. John's Parish Church, Croydon. Deposit 1*l.* Apply by May 31 to Mr. H. Carter Pegg, F.R.I.B.A., 452 London Road, Thornton Heath.

LONDON.—June 1.—For making alterations and re-decorating two wards at the Infirmary, Bancroft Road, Mile End, E. Mr. B. Catmur, Bancroft Road, Mile End, E.

LONDON.—June 6.—For the enlargement of Croydon Telephone Exchange. Deposit 1*l.* 1*s.* The Postmaster, Croydon, and at H.M. Office of Works, &c., Storey's Gate, S.W.

LONDON.—June 12.—For erection of a refuse destructor for dealing with the refuse of the district, including the provision of the necessary buildings, chimney, boilers, machinery, &c., for the Barnes Urban District Council. Deposit 1*l.* 1*s.* Mr. G. B. Tomes, A.M.I.C.E., engineer and surveyor, Council House, High Street, Mortlake, S.W.

LONDON.—June 27.—Constructional schemes with tenders are invited for the erection in reinforced concrete of new buildings for His Majesty's Stationery Office and Office of Works Stores in Waterloo Road and Stamford Street, S.E. Any system of construction may be adopted for the whole or part of the work. Deposit 3*l.* 3*s.* Mr. R. J. Allison, A.R.I.B.A., H.M. Office of Works, &c., Storey's Gate, S.W. (See advertisement.)

MACCLESFIELD.—June 3.—For alterations at the General Infirmary. Mr. A. E. Hanrahan, secretary.

MACCLESFIELD.—June 14.—For erection and completion of a public elementary school building, playsheds, boundary fences, and other works in connection therewith, on land in Athey Street. Deposit 2*l.* 2*s.* Messrs. Whittaker & Bradburn, architects, 19 King Edward Street, Macclesfield.

MANCHESTER.—May 31.—For the erection of additional bath-rooms and a waiting-room for messengers at the workhouse at Crumpsall. Deposit 10*s.* 6*d.* Mr. A. J. Murgatroyd, architect, 23 Strutt Street, Manchester.

NEWCASTLE-UPON-TYNE.—June 12.—For supply and erection of a single-storey shed about 320 ft. long and 66 ft. wide, for the Trade and Commerce Committee of the Council. The contract will include steelwork, brickwork, corrugated iron roof covering, glazing, sliding doors, &c. Send deposit of 2*l.* 2*s.* to the City Treasurer, Town Hall. The City Engineer's Office, Town Hall, Newcastle-upon-Tyne.

NEWTON ABBOT.—May 30.—For erection of a new laundry at Brookhill, Highweek. Mr. S. Segar, F.I.A.S., Union Street, Newton Abbot.

PLYMPTON ST. MARY AND PLYMSTOCK (DEVON).—May 27.—For erection of a new farmhouse, reservoir, water service, and other works at Hardwick Farm; also for new farmhouse, cattle and root houses, water services, alterations and additions to existing cottages and farm buildings at Wixenford Farm. Send names to either of the following by May 27, viz.: Mr. J. E. Holmes, agent, the Manor Office, Plympton; or Messrs. Carder & Carder, architects and surveyors, 24 Lockyer Street, Plymouth.

RADCLIFFE.—For erection of picture drome on the site of the Radcliffe Steam Laundry, Water Lane, Radcliffe, Lancs. Apply Mr. G. E. Tonge, L.R.I.B.A., architect, 371 Lord Street, Southport.

ROSS.—June 10.—For the restoration of the tower of the Ross Church, Herefordshire. Messrs. Smith & Watson, High Street, Ross, and Messrs. Nicholson & Hartree, architects, Offa Street, Hereford.

ROTHERHAM.—June 14.—For erection and completion of a small-pox hospital at Kimberworth, comprising administration, laundry, and ward blocks, boundary walls, construction of approach roads, laying out of grounds, &c. Deposit 2*l.* 2*s.* Mr. E. B. Martin, A.M.I.C.E., borough engineer, Town Hall, Rotherham.

RUAN MAJOR (CORNWALL).—May 27.—For erection of a new schoolroom, proposed to be built at Ebenezer, Ruan Major. Plans and specifications may be seen at the residence of Mr. W. Hosking, near the chapel, and tenders endorsed "Mason" and "Carpenter," must be sent not later than May 27 to Rev. W. Fairfax, Roskilly, St. Keverne.

RUGBY.—June 3.—For building a children's home and making alterations and additions at the Union workhouse and Board room. Deposit 1*l.* 1*s.* Mr. T. W. Willard, Market Place, Rugby.

ST. ALBANS.—June 8.—For alterations and additions to the School of Art and Technical Buildings. Deposit 2*l.* 2*s.* Mr. Urban A. Smith, county surveyor, Hatfield.

SCOTLAND.—For mason, carpenter, slater, plaster, plumber, and painter works for house, Banchory, Aberdeen. Messrs. Sutherland & George, architects, Aberdeen.

SCOTLAND.—May 29.—For the mason, joiner, plumber, slater, plasterer, and painter work in connection with the restoration of the buildings at the Kelso Union Poorhouse. Mr. J. P. Alison, F.R.I.B.A., architect, Hawick.

SEDGEFIELD.—June 1.—For alterations and additions to the Isolation Hospital at Sedgefield, Durham. Deposit 1*l.* 1*s.* Mr. J. Stones, surveyor, Union Offices, Sedgefield.

SEVENOAKS.—June 7.—For alterations and additions to the Infirmary at the Union Workhouse at Ide Hill. Deposit 1*l.* 1*s.* Mr. Ernest Pawley, architect, 86 High Street, Sevenoaks.

SNAITH.—May 31.—For the bricklayers', joiners' and plumbers' work in connection with the improvements to be carried out at the Council school, Yorks. Mr. E. L. Harrap, Divisional Clerk, W.R. Education Offices, Goole.

SOUTHALL.—June 13.—For supplying and fixing entrance gates and wrought-iron unclimbable fencing and other appurtenant works at Southall Park and the Recreation Ground. Mr. Reginald Brown, A.M.I.C.E., F.S.I., &c., engineer and surveyor, Public Offices, Southall, Middlesex.

SOUTH ELMSALL.—June 9.—The West Riding Education Committee invite whole or separate tenders for the following works: South Elmsall, New Council School (builder, joiner, tiler, plumber, plasterer, painter, ironfounder and smith, and asphalter). The Education Architect, County Hall, Wakefield. Send 1*l.* 1*s.* deposit to the West Riding Treasurer, Wakefield.

SOUTHMOOR.—For erection and completion of parochial hall and institute at Southmoor, near Stanley. Mr. J. Garry, F.R.I.B.A., architect, 47 Church Street, West Hartlepool.

STAFFORD.—June 3.—For the construction of a new engine house, boiler house, and boundary wall, at the waterworks pumping station, Milford. Deposit 2*l.* 2*s.* Mr. W. Plant, A.M.I.C.E., Borough and Waterworks Engineer, Borough Hall, Stafford.

SURBITON.—May 31.—For erection of three cottages on the site of the proposed sewage disposal works at Lower Marsh Lane. Deposit 1*l.* 1*s.* Mr. H. T. Mather, engineer, Council Offices, Surbiton.

SWINTON.—May 31.—For the construction of new classrooms and alterations to the cookhouse, bakehouse, &c., at their schools at Swinton, near Manchester, for the Board of Guardians. Deposit 10*s.* 6*d.* Mr. A. J. Murgatroyd, architect, 23 Strutt Street, Manchester.

TOTNES.—May 29.—For additions to the Seymour Hotel. Bridgetown. Mr. W. F. Tollit, architect, 10 High Street, Totnes, Devon.

TOTTINGTON (LANCS.).—May 31.—For the rebuilding of a retaining wall and contingent works at Brandlesholme Road, Greenmount. Mr. Lawrence Kenyon, surveyor, 33 Chapel Street, Tottington.

TROON.—May 29.—For erection of Wesleyan Methodist church at Plantation, near Troon, Cornwall. Mr. S. Hill, architect, Green Lane, Redruth.

TRURO.—May 31.—For erection of proposed additions to the Royal Cornwall Infirmary. Mr. A. J. Cornelius, M.S.A., architect, Truro.

WAKEFIELD.—June 8.—The West Riding Education Committee invite whole tenders for the following works: Adwick-le-Street, Woodlands new Council school, Kirkburton Council School, South Emsall Council school, asphaltting of playgrounds. Education Architect, County Hall, Wakefield. Send 1*l.* deposit in each case to the West Riding Treasurer, County Hall, Wakefield.

WALES.—For carrying out alterations and additions to No. 1 Railway Terrace, Penrhiwceiber. Apply to Messrs. Morgan & Elford, architects, 1 Jeffrey Street, Mountain Ash.

WALES.—For building a vicarage at Avon Vale, Port Talbot. Deposit 1*l.* 1*s.* Mr. Mansel H. Hunter, architect and surveyor, The Square, Neath.

WALES.—May 29.—For erection of eighteen or more houses at Abertridwr, for the Cwmceffyl Building Club. Mr. G. A. Treharne, engineer and architect, Station Street, Aberdare.

WALES.—May 29.—For new galleries, class-rooms, and decorating Bethel Chapel, Libanus Road, Ebbw Vale. Rev. E. Clements, Fernleigh, Ebbw Vale, Mon.

WALES.—May 29.—For the erection of 17 houses or more at Woodfield, Blackwood, Mon., for the Church View Building Club. Mr. D. J. Thomas, architect, High Street, Blackwood, Mon.

WALES.—May 30.—For additions and alterations to the Cwmffrwdor branch premises for the Abersychan, British, and Talywain Industrial Co-operative Society, Ltd. Mr. A. G. Babbidge, architect and surveyor, Clarence Chambers, Pontypool.

WALES.—May 30.—For erection of a public convenience in Sloper Road, Grangetown, Cardiff. The City Engineer's Office, City Hall, Cardiff.

WALES.—May 31.—For erection of Blackwood Police Station and Petty Sessional Court. Deposit 1*l.* 1*s.* Mr. W. Tanner, F.S.I., county surveyor, Blackwood, Mon.

WALES.—May 31.—For erection of additions to the National School, Bwlch-y-Cibau. Mr. R. W. Davies, M.S.A., architect, &c., Carno, Montgomery.

WALES.—May 31.—For the following works, for the Glamorgan County Council, viz.:—(1) Repairs to offices at Abergwynfi Council school; (2) alterations to offices at Seven Sisters Council school; (3) heating chamber at Tairgwaith Council school, near Gwauncaegurwen; (4) alterations to offices at Sketty Council school; (5) boundary walls and railings at Cwmlai Council school, near Tonyrefail; (6) levelling playground, fencing, &c., at Gilfach Goch Council school. The Glamorgan County Council Offices, Westgate Street, Cardiff.

WALES.—June 1.—For alterations at the White Horse Inn, Fochriw, for Messrs. David Williams & Co., Taff Vale Brewery, Merthyr. Mr. C. M. Davies, M.S.A., 112 High Street, Merthyr.

WALES.—June 3.—For erection of four houses at Penygarn. Mr. D. C. Udell, architect and surveyor, Commercial Street, Pontypool.

WALES.—June 7.—For the work required in making roads and footpaths, laying subsoil and surface-water drains, building retaining walls, erecting messroom and bier house, entrance gates, and railings, and any other work necessary in the construction of a burial ground at Cwm, for the Ebbw Vale Urban District Council. Deposit 2*l.* Mr. T. J. Thomas, town engineer and surveyor, Ebbw Vale, Mon.

WALES.—June 9.—For building a farm house at Cwmporthman, Blaenporth. Apply to Mr. W. H. Harris, Cwmporthman.

WALES.—June 10.—For the general builders' work in alterations and repairs of the Town Hall, Pembroke. Deposit 5*s.* Mr. H. R. Crabb, A.R.I.B.A., Bush Street, Pembroke Dock.

WREXHAM.—June 1.—For erection of extensions to the Imperial Hotel, Regent Street. Deposit 2*l.* 2*s.* Mr. F. A. Bevan, architect, 5 Queen Street, Wrexham.

WREXHAM.—June 3.—For pulling down and rebuilding a stone boundary wall and other works in front of the Roman Catholic Church grounds, Regent Street. Mr. J. England, borough engineer, Willow Road, Wrexham.

WREXHAM.—June 6.—For the following works, for the Corporation, viz.:—(1) Alterations to the market hall shop; (2) alterations and extensions to the conveniences, windows, &c., at the Victoria Council schools; (3) painting at the general market and shops in Henblas Street; (4) painting of offices at the Willow Depot; (5) cleaning down and painting cemetery superintendent's lodge. Mr. John England, borough engineer, Willow Road.

YORK.—May 29.—For extensions to electric-car sheds, Fulford Road. Deposit 1*l.* 1*s.* Mr. F. W. Spurr, City Engineer, Guildhall, York.

YORK.—May 31.—For supply of a proposed hospital for open-air treatment of consumption. Deposit 1*l.* 1*s.* Mr. F. W. Spurr, city engineer, Guildhall, York.

"In these days it pays better to work for other people than to employ men on one's own," said a master builder at Bow County Court last week.

THE Local Government Board has formally sanctioned the borrowing by the Rural District Council of Penrith of the sum of 21,800*l.* for the purpose of water supply. The source is from springs situated on the fell west of Mungrisdale at an altitude 1,250 feet above Ordnance datum. There will be two service reservoirs. The total length of main is over 52 miles. The Board of Agriculture and Fisheries has also sanctioned the scheme. The contracts will be let and the works commenced without delay. Mr. Joseph Graham, Castle Street, Carlisle, is engineer for the scheme.

TENDERS.

APPLEBY.

For the execution of works in connection with the Market Hall improvement, Appleby.

Accepted tenders.

Brassington Bros. & Corney, Settle, joiners.	£537	0	0
Lindsay & Robinson, Appleby, masons.	365	15	7
J. & W. Scott, Appleby, plumbers.	148	19	0
Dodgson & Son, Appleby, plasterers.	109	0	0
J. & W. Scott, painters.	27	8	9

BITTON.

For teacher's house, Bitton Council school, for the Gloucestershire Education Committee. Mr. R. S. PHILLIPS, architect, Gloucester.

Wren	£550	0	0
Williams & Son	499	0	0
Lovell	498	8	0
England & Son	455	0	0
Heard	447	9	8
Broad & Sons	425	0	0
Walters & Son	420	17	0
ADAMS & JEFFRIES, Oldland*	419	0	0

* Accepted with reductions.

DOVER.

For lining the floor of the gentlemen's swimming bath at the Sea Front Baths, Marine Parade, with the best glazed tiles. Mr. W. C. HAWKE, A.M.I.C.E., borough engineer, Dover.

Young & Son	£225	0	0
Barwick	175	0	0
Hayward & Paramor	169	3	4
Lewis & Sons	164	10	0
Austen & Lewis	163	18	4
W. E. COVENEY, Dover (accepted)	136	10	0
Munro (withdrawn)	86	10	0

HARTSHILL.

For erection of a new out-patient department building at the North Staffordshire Infirmary. Messrs. RUAAULT & YOUNG, architects, 17 Southampton Street, Bloomsbury, W.C.

Ellis	£10,491	0	0
Grant & Co.	10,400	0	0
Arnold & Son	9,959	0	0
Meiklejohn & Son	9,910	0	0
Godwin	9,879	0	0
Tomkinson & Betteley	9,747	0	0
J. & J. Warner	9,560	0	0
S. WILTON, JUN., Newcastle, Staffs. (accepted)	9,482	0	0

HUNMANBY.

For sinking new wells. Messrs. ELLIOTT & BROWN, Nottingham.

Hunmanby Well.

Moss & Sons	£2,385	0	0
Sangwin	1,433	10	10
Sangwin, jun.	1,413	0	0
Lawson & Son	1,275	0	0
Tilley & Sons	1,268	0	0
Hymas	1,227	16	0
Barrick	1,134	16	9
Paramors, Ltd.	1,079	19	0
Rollinson & Sons	948	10	0
Lane Bros.	864	13	0
G. ALLSEBROOK & Co., Artesian Works, Crown Street, Reading (accepted)	778	17	0

Ashwell Well.

	Well.	Additional Works.
Moss & Sons, Ltd.	£1,190 0 0	£420 0 0
Sangwin, jun.	567 8 0	418 4 0
Rollinson & Sons	524 10 0	195 10 0
Lane Bros.	504 16 0	272 9 6
Barrick	423 16 6	316 13 0
Brown & Sons	389 0 0	—
Barnes	308 0 0	293 0 0
Allsebrook & Co.	296 10 0	234 12 0
Knott	245 3 0	198 15 0
C. J. ELL, Victoria Iron-works, Leagrave, Luton (accepted)	214 2 0	—
Tilley & Sons	422 9 4	358 11 6

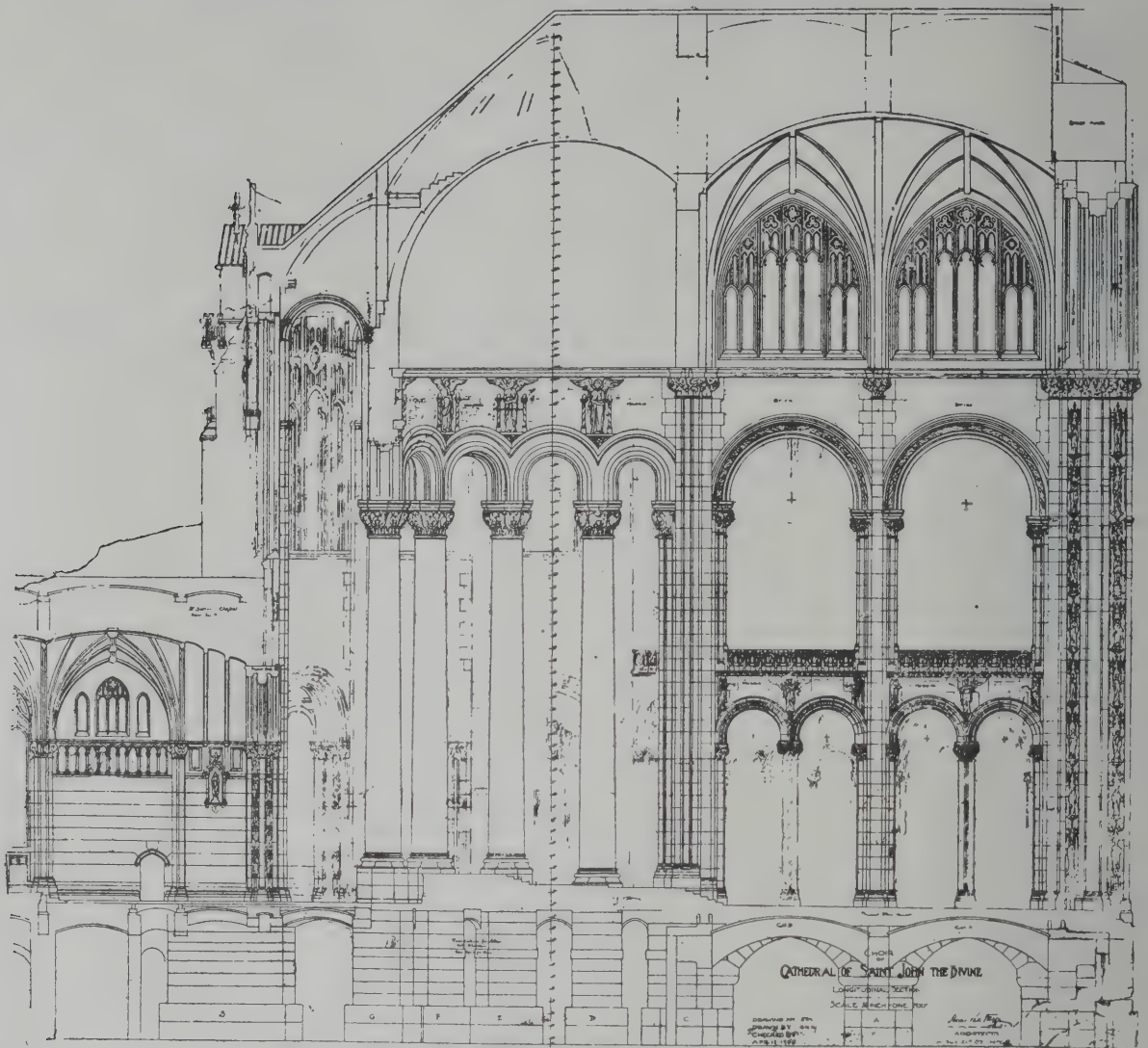


FIG. 5.

LONGITUDINAL SECTION OF CHOIR, CATHEDRAL OF ST. JOHN THE DIVINE, NEW YORK.—Messrs. HEINS & LaFARGE, Architects.

FIGS. 5 & 6.—SECTIONS OF THE CHOIR, CATHEDRAL OF ST. JOHN THE DIVINE, NEW YORK. MESSRS. HEINS & LaFARGE, ARCHITECTS, ILLUSTRATING THE ARCADES OF THE COMPLETED CHOIR, WHICH ARE DESCRIBED IN THE TEXT AS REGARDS ASYMMETRIC DIMENSIONS AND VARIATIONS IN THE HEIGHTS OF THE CAPITALS.

LONDON.

For the supply of size 3 in. by 9 in. by 4 in. jarrah wood paving blocks, for use in connection with the L.C.C. tramways, delivered free, either by van or barge, during a period of approximately 12 months ending June 30, 1912, as follows:—(a) 10,000 to Metropolis Wharf; (b) 35,000 to Deptford Wharf; (c) 10,000 to Battersea Wharf; (d) 75,000 to Belvedere Wharf.

Price 1,000 for delivery to—
Metropolis Deptford Battersea Belvedere
Wharf. Wharf. Wharf. Wharf.

For delivery by van.

Millars' Karri & Jarrah Co. (1902)	£10 2	£9 16	£9 16	£9 16
Improved Wood Paving Co., Ltd.	10 0	9 13	10 0	9 17
GRIFFITHS & Co. (accepted)	9 18	9 17	10 0	10 0
Acme Flooring & Paving Co. (1904)	10 1	10 1	10 1	10 1
Lee & Sons	10 1	9 19	10 2	10 2

For delivery by barge.

MILLARS' KARRI & JARRAH COMPANY (1902), LTD., Pinners Hall, E.C. (accepted)	—	9 12	9 13	9 12
Improved Wood Paving Co., Ltd.	—	9 12	—	9 14
Griffiths & Co.	9 19	9 14	9 15	9 15
Acme Flooring & Paving Co. (1904)	10 1	10 1	10 1	10 1
Lee & Sons	10 4	9 18	9 18	9 18

LONDON—continued.

For the work of erecting two shops and 129 cottages and cottage flats on the first part of the western section of the L.C.C. Old Oak Estate, Hammersmith. The cottages comprise 26 of five rooms, 27 of four rooms, 4 of three rooms and box-room, 29 of three rooms, and 17 of two rooms. The cottage flats number 26, of which 10 have two rooms and 16 one room. All the tenements have in addition a separate scullery and water-closet.

Charles Wall	£29,597 0 0
F. & H. F. Higgs	28,375 0 0
Leslie & Co.	25,398 0 0
Roberts & Co.	24,782 0 0
Coxhead	24,509 0 0
Fred. & T. Thorne	24,335 0 0
H. L. Holloway	24,270 0 0
Jaggard	23,983 0 0
Rowley Brothers	23,790 0 0
Nicholls & Son, Finchley (recommended)	22,945 0 0
Architect's estimate	24,940 0 0

For erection of 20 temporary urinals in streets adjoining the route of the forthcoming Coronation processions, for the Westminster City Council.

Howard & Co.	£590 0 0
H. & E. Lea	590 0 0
Finch & Co.	557 10 0
Hampton & Sons	540 0 0
Cubitt & Co.	520 0 0
Holloway Bros.	490 0 0
Allen & Sons	400 0 0
C. F. Kearley	392 0 0
Patman & Fotheringham, Ltd.	385 0 0
J. Carmichael (recommended)	350 0 0

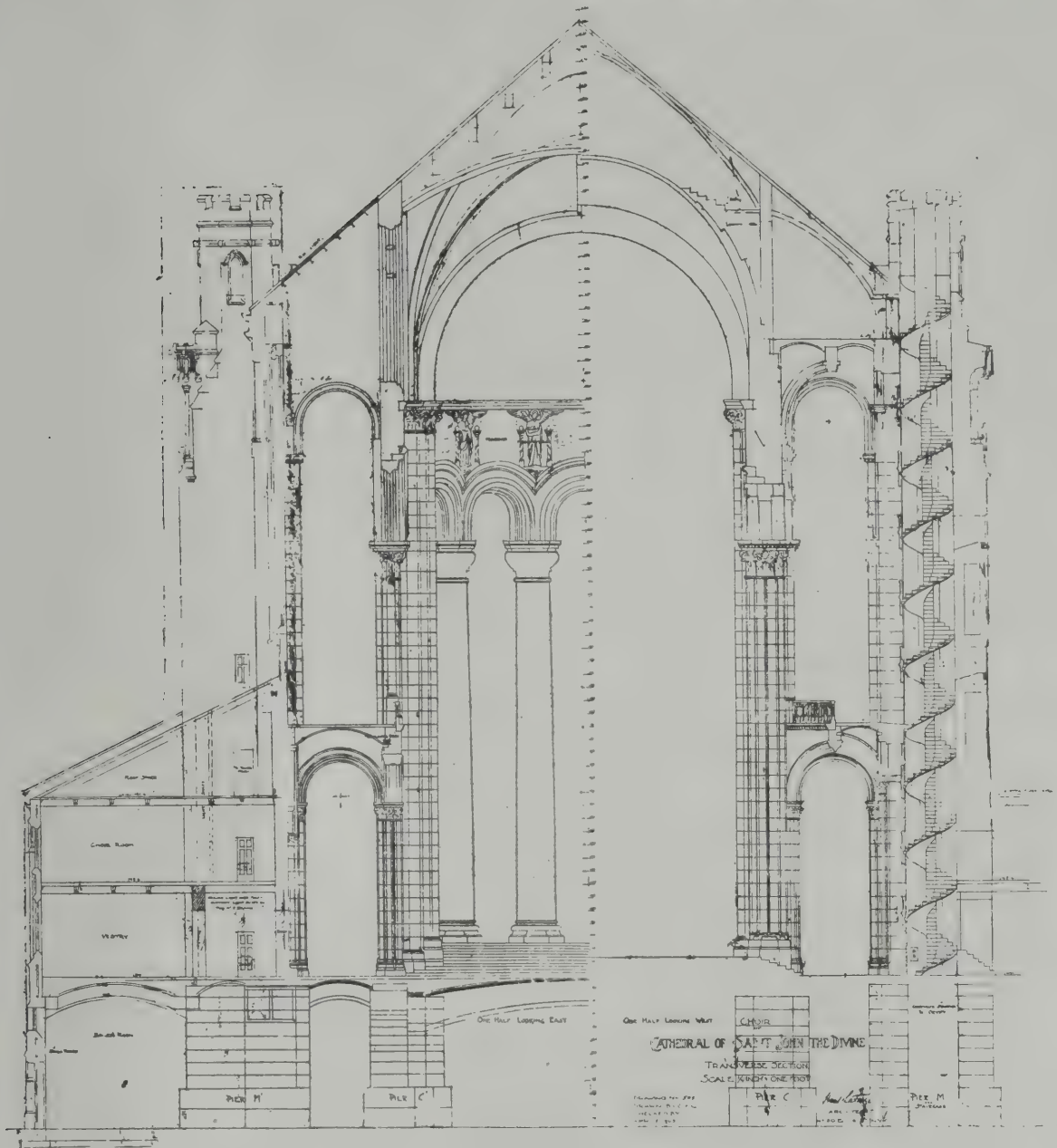


FIG. 6.
CROSS SECTION, HALF LOOKING EAST AND HALF LOOKING WEST OF THE CHOIR OF THE CATHEDRAL OF ST. JOHN THE DIVINE, NEW YORK.—Messrs. HEINS & LAFARGE, Architects.

LONDON—continued.			LONDON—continued.		
For erection of a committee room at the Workhouse, Swaffield Road, Wandsworth.			For the erection of a handicraft centre for 20 boys on the Heckford Street site (Limehouse).		
Gunner	£849	0 0	Parrot & Isom	£1,020	0 0
Ronald	840	0 0	Newell & Lusty	871	3 9
J. & M. Patrick	800	0 0	Reason	815	15 0
Harris	779	0 0	McLaughlin & Harvey	799	2 5
Williams	733	0 0	Harris	782	0 0
Jewell	695	0 0	Leng	767	0 0
Hammond	687	0 0	Symes	747	0 0
Johnson & Co.	670	0 0	Price	709	10 0
Peddle	669	10 0	Roome & Co.	702	0 0
Pasterfield & English	669	0 0	J. & C. Bowyer	689	0 0
Fletcher	618	0 0	Gathercole Bros. (recommended)	654	0 0
Eaton	616	0 0	Architect's estimate	740	0 0
F. & G. FOSTER, Norwood Junction, S.E. (accepted)	597	0 0			
For cleansing and repainting of Vauxhall Bridge for the L.C.C.			OLDLAND.		
King & Son	£3,321	0 0	For alterations and additions to Cadbury Heath Council school, for the Gloucestershire Education Committee.		
Proctor & Sons	3,097	19 10	Mr. R. S. PHILLIPS, architect, Gloucester.		
Markham & Markham	3,051	0 0	England & Son	£1,025	0 0
Vigor & Co.	2,834	10 0	Bray & Slaughter	998	0 0
Dudley	2,577	12 0	Lovell	997	10 0
A. H. Inns, Bishopsgate, E.C. (recommended)	2,198	0 0	Walters & Son	977	0 0
Estimate of the Chief Engineer	3,200	0 0	Adams & Jefferies	900	0 0
			HEARD, Shirehampton (accepted)	834	13 11

MAIDSTONE.

For the erection of new County Offices and alterations to the Sessions House adjoining. The County Architect, Maidstone.

Gluyas	£51,196	0	0
Burrows	49,920	0	0
Godden & Son	48,161	0	0
Higgs & Hill	47,984	0	0
Coles	47,510	0	0
J. & M. Patrick	46,500	0	0
Skinner	46,350	0	0
F. & E. Davey	46,097	0	0
Pattinson & Sons	45,990	0	0
Johnson & Co.	45,934	0	0
Denne & Son	45,790	0	0
Jarvis	45,670	0	0
Holloway Bros.	45,400	0	0
West Bros.	45,240	0	0
Wallis & Sons	44,334	0	0
PETHICK BROS., Ltd., Westminster (accepted)	43,444	0	0

Granite Masonry.

Cooper, Wettern & Co., Ltd. (recommended)	2,870	0	0
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Fireproof Flooring.

Armoured Tubular Flooring Co., Ltd. (recommended)	2,495	0	0
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WALTHAMSTOW.

For the erection of a boundary wall, &c., around the remaining portion of the site, William Elliott Whittingham School, Walthamstow. Mr. H. PROSSER, M.S.A., architect to the Committee.

Fletcher	£712	0	0
Torode	698	16	0
R. & E. Evans	597	0	0
Hammond & Son	597	0	0
Sands	595	0	0
Barton	594	0	0
J. & J. Dean	578	0	0
Fairhead & Sons	563	0	0
ABBOTT & CHARLTON, Acton (accepted)	539	18	7

WATFORD.

For works at the International Stores, St. Albans Road. Messrs. G. BAINES & SON, architects, 5 Clement's Inn, W.C.

Estimates A. B. and C.

Bainbridge & Son	£641	0	0
Brightman & Son	533	15	0
Lewis & Bros.	522	17	6
Knock	522	13	0
Wiggs & Sons	521	0	0
Maxey & Son	516	0	0
Clark Bros.	495	2	6
KING & SONS (accepted)	480	12	0

STANSTED.

For new school for girls and infants and alterations to boys' school at Stansted, for the Essex County Council. Mr. F. WHITMORE, county architect, Chelmsford.

Staines	£3,179	7	1
Trudgett	3,075	0	0
F. & E. Davey	3,066	0	0
Ambrose	3,064	7	0
Grimwood & Sons	3,058	10	0
Kidman Bros.	3,054	0	0
Carter	2,990	0	0
Robinson	2,946	15	5
Farren & Son	2,932	9	0
Brown	2,911	7	4
Redding & Son	2,873	0	0
Fryd	2,866	0	0
Bell & Sons	2,856	0	0
Willmott	2,826	0	0
Day	2,814	0	0
Glasscock & Son	2,805	0	0
D. Robinson, jun.	2,789	13	4
Clark & Sons, Cambridge (recommended)	2,612	0	0
Architect's estimate	2,760	0	0

THE FESTIVAL OF EMPIRE AND IMPERIAL EXHIBITION, CRYSTAL PALACE.

THE note of "Empire" is being sounded on every side just now in this country, and nowhere more triumphantly than at the Crystal Palace, where the much-talked-of exhibition was recently opened with much *eclat* by His Majesty the King. It was known that the dominant note of this year's mammoth Festival would be the Gospel of Empire. That promise has been amply fulfilled. "The Palace" has stirred itself like a giant after a long sleep. Its rejuvenation has confounded the critics who talked of it as a senile resort tottering to its doom of extinction, and justified those who saw in its future unlimited possibilities for popular entertainment, if only the traffic facilities could be brought up-to-date. The electrification of the railway system and the new fast services have been a most important advance in this respect.

To most visitors the outstanding feature of this 1911 exhibition will be found to the south of the terrace, where many of our Dominions Beyond the Seas are represented by exact replicas of their Parliament buildings, in which are exhibited examples of the productive and industrial wealth of the different Dependencies. These are approached through scenes realistically laid out to suggest the principal avocations of the various countries. An intrinsic part of this section is the "All Red" route, *i.e.* the specially-constructed full-size electric railway, which conveys enquiring visitors along its one and a half mile of track in a lightning tour of the different Colonies. By this means an astonishing amount of information can be assimilated in the twenty minutes or so journey which separates Newfoundland from South Africa, *via* Canada, Jamaica, Malay Peninsula, India, Australia, and New Zealand.

This Empire in Miniature is, of course, only one of the attractions to Sydenham. In the interior of the Palace itself there is an All-British exhibition of Arts and Industries. Here also a succession of concerts and other entertainments will take place. In the grounds there is an open-air amphitheatre designed by Sir Aston Webb, R.A., which will be used for a variety of purposes, including the Pageant of London. Individual mention cannot here be made of the many bungalows and pavilions which offer instruction or amusement. The Exhibition is amply sufficient to occupy the visitor on many successive days. It has received the official patronage of His Majesty's Government, and the entire profits will be devoted to the King Edward VII. Hospital Fund.

LONDON MASTER BUILDERS' ASSOCIATION.

THE monthly meeting of the Council of the above Association was held at Koh-i-Noor House, Kingsway, on the 18th inst., Mr. G. Bird Godson, President, in the chair, supported by a large number of members.

Reference was made to the Home Office Departmental Inquiry into Lead Poisoning and the evidence on the subject to be supplied.

It was reported that the House of Lords decided in favour of the builder in the final appeal case of Roberts *v.* Hickman. The financial assistance voted to Messrs. Roberts, in the event of their case not being successful will, therefore, not be claimed. Great interest has been aroused by this case greatly affecting the interests of architects and builders.

The effect of the National Insurance Bill upon the trade was fully discussed, and the Council was unanimously of opinion that if the additional burdens set forth in the Bill are to be imposed upon the trade employers would be glad to see the principle extended so that their present risks under the various Employers' Liability Acts should be included in one payment, and the Association's representatives on the Employers' Parliamentary Council were requested to do their best to attain this end.

A further election of new members followed.

MR. G. H. FELLOWES PRYNNE, architect, London, has prepared plans for the practical reconstruction of St. Nicholas Church, Taplow. It is proposed to build a new nave, aisles, vestries, and chapel, at an estimated cost of 7,350*l.*

It is proposed to enlarge Walton Parish Church, Liverpool, by the addition of a side chapel, vestries and ambulatory providing 120 additional seats. It will also be necessary to repair the roof and strengthen the walls of the existing building. The estimated cost is 2,415*l.* Mr. L. Nagington, Liverpool, is the architect.

THE L.C.C. SCHOOLS.

THE Education Committee of the London County Council have, in accordance with the practice obtaining in previous years when the annual estimates have been considered by the Council, submitted observations on the education account for the financial year 1911-12.

The total of the estimates amounts to 729,675*l.*, which is an increase by 179,095*l.* on the estimates for the year 1910-11.

The estimate in respect of new elementary Council schools is 58,665*l.* less than for 1910-11. This is due to the fact that a considerable part of the Council's present programme of provision of elementary school accommodation has been proposed as a result of the survey of the accommodation of the county made in connection with Article 14 of the code of regulations for public elementary schools, and to the fact that these proposals have been made too recently to render it probable that a large sum will be needed for actual building operations during the year. On the other hand, in the estimates for the year 1910-11 most of the new elementary schools provided for were in a more advanced stage. Although, however, the provision for new schools during the year 1911-12 is smaller, the provision in respect of additions and alterations to elementary Council schools shows an increase of 15,825*l.* over last year's estimate, and the amount estimated in respect of modernising and improving elementary Council schools shows an increase of 48,700*l.*

Whilst it has not been found necessary to make provision for as much expenditure on building elementary schools and enlargements as was made for the year 1910-11, it is pointed out that the provision for sites has been increased by 27,070*l.*

In respect of new elementary Council schools and additions and alterations to existing schools there is included a sum of 270,000*l.*

The Council's present programme of elementary school accommodation amounts to about 29,000 places. Of this number about 2,000 places (mostly being provided) represent the residue of the provision which had to be made in order to meet the loss of accommodation arising out of the survey of the non-provided schools; 13,000 places are required to meet the requirements of Article 14 of the code of regulations for public elementary schools; 3,000 places are to replace old and out-of-date schools; and 11,000 places are to meet increases of population in various parts of the county and for other purposes. In the present estimates provision is made for the expenditure which is likely to be incurred in the financial year 1911-12 as a result of the progress made in carrying out this programme.

The average cost of a new elementary school place is usually put approximately at 30*l.*, *i.e.*, 10*l.* for site and 20*l.* for building and equipment. The cost of sites varies very considerably according to the particular district in which they are situated, and the cost of building varies to some extent owing to the particular nature of different sites and other circumstances. The estimates are, however, framed on the estimated cost of each individual site or building provided for therein.

With respect to sites, for which the total estimate is 163,070*l.*, about half of the amount is in respect of sites over which compulsory powers of purchase are being sought in the current session of Parliament.

With regard to the buildings, it may be stated that the cost of building 8,650 places has been estimated at 23*l.* 3*s.* 7*d.* a place. In connection with this figure, however, 6 out of the 16 proposals involved are "central" schools, and in other cases the estimated cost includes the cost of domestic economy or other centres to be erected on the same site as the new school. The average cost a place of the 6 new schools (4,268 places) where none of these complications arise is 20*l.* 1*s.* 11*d.*

Modernising and Improving Elementary Council Schools Vote.—The total expenditure for the year in respect of buildings is estimated at 103,040*l.*, including 16,000*l.* provided in the maintenance estimates. This is an increase of 43,040*l.* over the amount provided for building work in previous years. The increase is due very largely to the policy of entirely reconstructing some of the older schools where it is found that remodelling cannot be satisfactorily carried out at a moderate figure or where the comparatively small difference between the cost of remodelling and of reconstruction is such as to justify the extra expenditure so as to obtain an entirely new school.

Accommodation in Respect of Special Schools.—The amount included in the estimates for new special schools and enlargements of existing special school is 50,000*l.* (3,500*l.* for sites, 46,640*l.* for buildings, and 710*l.* for equipment, the total

written down to 50,000*l.*). The proposed new special schools and enlargements, expenditure on which is provided for in the estimates, will provide accommodation in all for 1,965 children (blind 30, deaf 100, mentally defective 1,080, and physically defective 755).

Accommodation in Respect of Higher Education.—As regards secondary schools, practically no building operations were undertaken during the year 1910-11. The plans of several schools have, however, now reached a somewhat advanced stage, and it is expected that the work will be put in hand before or during the year 1911-12. This is the reason for the estimate of 50,000*l.* in respect of buildings, an increase by 41,000*l.* over the estimate for 1910-11.

As regards technical institutes and schools of art, the increased expenditure on capital account in respect of buildings from 14,200*l.*; the estimate for 1910-11, to 54,630*l.* is due to the provision of 10,150*l.* for the extension of the L.C.C. Camberwell school of arts and crafts, 13,500*l.* for the extensions of the trade schools for girls at Hammersmith and Bloomsbury, 15,800*l.* for the erection of new premises at the L.C.C. school of photo-engraving and lithography, and 6,000*l.* for the extension of the L.C.C. Hackney institute. These proposals, with the exception of the L.C.C. Hackney institute, have been approved by the Council. This increased expenditure was anticipated when the estimate for the year 1910-11 was prepared, and a sum of 33,800*l.* was included accordingly in the vote for the six months ending September 30, 1911.

VARIETIES.

MESSRS. JAMES KEITH & BLACKMAN, LTD., engineers, Arbroath, are negotiating for the purchase of ground adjoining their present works for the purpose of erecting important extensions.

THE Horsham Urban District Council are considering the desirability of erecting a refuse destructor in connection with their electricity works. The estimated cost of the apparatus is 1,130*l.*

FUNDS are being raised for the erection of a new church at Sunbury, Surrey, in place of the present temporary St. Saviour's Church. A site has been obtained and paid for. The total cost of building will be 8,000*l.*, and a commencement will be made shortly by erecting the chancel and two bays, at a cost of 3,500*l.*

THE Sewerage Committee of the Leeds Corporation on Monday accepted (subject to the approval of the Council) the tender of Messrs. E. Arnold & Sons, of Leeds and Doncaster, for sewage disposal works at Thorpe Stapleton. The tender amounted to over 40,000*l.*

MESSRS. HOARE & WHEELER, architects, London, have prepared the plans for the proposed church of St. Saviour, in the parish of Prittwell, Westcliff-on-Sea, to replace the present mission church. The first portion will consist of the five western bays of nave and aisles, providing accommodation for 474 persons, at an estimated cost of 7,052*l.* When completed the church will accommodate 1,100 and is estimated to cost 15,000*l.*

THE Cathedral Church of St. Giles, Edinburgh, after being closed for four weeks, was re-opened on Sunday for public worship. The walls and church generally have received a thorough cleaning, such as they have not received for the last twenty-eight years. The walls from top to bottom were thoroughly brushed, the regimental flags were taken down and dusted, and the windows cleaned. Electric light has been introduced under the direction of Mr. R. S. Lorimer, A.R.S.A., architect to the Cathedral Board.

THE Selby Urban District Council decided last week to buy four acres of land adjoining the park at Selby from Mr. William Bell, of Aysgarth, for 2,000*l.* It is intended to build 56 much-needed cottage houses with an area for a playground, and to use over an acre as an extension of the park. It is understood that when the necessary sanction has been obtained from the Local Government Board, the proposed blocks of houses will be provided with a playground in the centre, half-an-acre of land being devoted to this purpose.

THE Ayr Dean of Guild Court, at their fortnightly meeting on Friday, May 19, passed the following plans:—New gymnasium for the Ayr Industrial School. Architect, Mr. J. K. Hunter, F.R.I.B.A., Ayr. Alterations to Commercial Bank, Ayr. Architect, Office of Works, George Street, Edinburgh. Addition to house in Park Circus, Ayr. Architect, Mr. J. K. Hunter, F.R.I.B.A., Ayr. Addition to Temperance Hotel, Killoch Place, Ayr. Architect, Mr. Wm. Cowie, A.R.I.B.A., Alloway Chambers, Ayr.

"THE HOMESTEAD" is the title of a new quarterly illustrated residential gazette issued by the Great Central and the Metropolitan Railway Companies. Its purpose is to show the Londoner what attractive neighbourhoods await him in the area called the "Beautiful North-West." The information given includes a brief description of the locality, together with such useful data as are demanded by everyone who has to cut his coat according to his cloth. It is evident that the compiler has had before his mind first and foremost the class who at present live in the long, unlovely streets of typical Suburbia, but who may be expected to joyfully set up their roof tree in more salubrious surroundings when once they realise that it can be done with ease.

At the last meeting of the Edinburgh Dean of Guild Court warrant was granted for the extension of the buildings of Edinburgh Academy, Henderson Row, by the erection of a building comprising a new dining hall and additional classroom accommodation. The cost, it is understood, will amount to 5,000*l.* Plans were also passed for the extension of George Heriot's School, at a total cost of 13,000*l.*, by the erection of new laboratories to be erected according to plans prepared by Mr. John Anderson, superintendent of works. The petition by the Edinburgh Provincial College Committee for the Training of Teachers for the erection of a building at the corner of St. John Street and South Back Canongate was continued for a week. This work will involve the demolition of seven tenements, a church, a large educational institute, and some slum property, besides several modern dwellings.

STATISTICS of plans passed at Ayr Dean of Guild Court for the past year were submitted at the Court last week by the master of works. The total number of warrants granted was forty-three, and the estimated value of buildings was 52,993*l.*, as compared with 44,733*l.* in the previous year. These included 11 dwellings, 5,742*l.*; 17 business premises (including the following public works): County Hospital alterations, 1,000*l.*; Liberal Club, 4,000*l.*; Congregational Hall, 1,500*l.*; new Newton Academy Schools, 11,500*l.*; North Quay wall, 12,500*l.*; Ayr Gas Co.'s gasometer, 1,600*l.*; Cattle Market byres, 2,444*l.*; total, 34,544*l.*; grand total, 40,826*l.*; 22 alterations, 3,925*l.*

In the course of a report for the year 1910 on the trade of the Consular district of Baltimore issued recently as a Consular report, Mr. Consul G. Fraser states:—The chief engineer of the Sewage Commission proposes, as soon as the sewage disposal plant at Back River—the point of the final discharge of the sewage into the Chesapeake Bay—is completed, to use the fall of the water after it has passed through the various tanks, which will be 18 feet, to operate turbines for the generation of electricity. It is expected that the quantity of water passing from the outfall will produce about 455 horse-power. The intention is to light and operate the disposal works with the current produced, and the chief engineer believes that the surplus will be sufficient to light the City Hall and the Court-house in Baltimore.

WHITSUNTIDE HOLIDAYS.

WE have just seen a copy of the A.B.C. Programme issued by the Great Central Railway Company. There are over 300 seaside and inland health resorts in the Midlands and the North, including Liverpool, Isle of Man, and West Coast, Cleethorpes, Scarborough, and East Coast, which can be reached in quick time at very low fares, and the choice of destination stretches from the Midland Counties to the North of Scotland. To those not willing to go so far away, the Vale of Aylesbury, Chiltern Hills, and Stratford-on-Avon should particularly appeal. Those wishing to undertake a walking or cycling tour, visiting the beauty spots of Middlesex, Herts, and Beechy Bucks are given a wide range of tours at low fares. Express corridor trains with buffet car accommodation will leave Marylebone at suitable times on June 2, 3, 4, and 5, and full particulars are contained in this programme, which may be obtained free at Marylebone Station, any of the Company's town offices and agencies, or by post from Publicity Department, 216 Marylebone Road, N.W.

FOR spending Whitsuntide on the Continent the Great Eastern Railway Company's Hook of Holland route offers exceptional facilities. Passengers leaving London in the evening arrive at Amsterdam, The Hague, &c., the following morning. From the Hook of Holland through carriages and restaurant cars run in the North and South German express

trains to Hamburg, Berlin, Cologne, and Wiesbaden. Special tickets at reduced fares will be issued by the Antwerp-Harwich route for Brussels. For the convenience of passengers, tickets dated in advance can be obtained at the Liverpool Street Station Continental Inquiry or Booking Office. The Danish Royal Mail steamers of the Forenede Line of Copenhagen will leave Harwich for Esbjerg (West Coast of Denmark) on Wednesday, May 31, and Saturday, June 3. The Swedish Royal Mail steamers of the Thule Line of Gothenburg will leave Harwich for Gothenburg June 3. The General Steam Navigation Company's steamers will leave Harwich for Hamburg May 31 and June 3.

THE South-Eastern and Chatham Railway have made special Continental arrangements. Cheap tickets will be issued to Paris by express services, *via* Folkestone and Boulogne, leaving Charing Cross at 10 A.M. and 2.20 P.M. on June 1, 2, 3, 4, and 5, also on the same date by the right mail leaving Charing Cross at 9 P.M., returning from Paris at 8.25 A.M. or 2.30 P.M., *via* Boulogne, or at 9.15 P.M., *via* Calais, any day within fourteen days. Cheap tickets to Brussels will be issued from May 31 to June 5, *via* Dover-Calais, Folkestone-Boulogne, and Dover-Ostend by express, leaving Charing Cross at 9 A.M., 2.20 P.M., and 9 P.M., returning from Brussels within fourteen days, and by any service. A cheap excursion to Boulogne will leave Charing Cross at 2.20 P.M. on June 3 and June 4, returning at 11.45 A.M. or 6.30 P.M. on Whit-Monday. Cheap return tickets, available for eight days, will be issued from Charing Cross to Boulogne from May 31 to June 5 inclusive, available by the 10 A.M. and 2.20 P.M. services. Similar tickets will also be issued to Calais by the 9 A.M. and 9 P.M. services from Charing Cross. Cheap tickets to Le Touquet and Paris-Plage, *via* Folkestone and Boulogne, will also be issued. Special cheap eight-day return tickets to Amsterdam, The Hague, Scheveningen, and other Dutch towns, *via* Queenborough and Flushing, will be issued from May 31 to June 5 inclusive, leaving Victoria and Holborn at 9.55 A.M. Cheap eight-day return tickets to Ostend will be issued from May 31 to June 5 inclusive. Cheap tickets to the Belgian Ardennes will be issued. During the holidays the Continental services will run as usual. A special service to Switzerland (1st and 2nd class), *via* Dover, Calais, Laon, and Bâle, will leave Victoria at 8.20 P.M. and Charing Cross at 9 P.M. on June 2.

The home arrangements of the South-Eastern and Chatham Railway are extremely complete. Return tickets to Tunbridge Wells, St. Leonards, Hastings, Bexhill, Rye, Winchelsea, Canterbury, Whitstable, Herne Bay, Birchington, Westgate, Margate, Broadstairs, Ramsgate, Sandwich, Deal, Walmer, Dover, Folkestone, Shorncliffe, Hythe, Sandgate, and New Romney (Littlestone-on-Sea) will be issued from London by certain trains on June 2, 3, and 4, available to return on June 4, 5, 6, and 7, by any train (mail and boat expresses excepted). A large number of cheap day and half-day excursions have been arranged for Whit-Sunday and Monday. Cheap return tickets will be issued from London to the Crystal Palace (High Level) on Whit-Monday, 1*s.* 6*d.* third class, including admission. Full particulars of the Continental and home excursions, extension of time for certain return tickets, alterations in train services, &c., are given in the special holiday programme and bills.

A SCHEME is on foot for the formation of a garden suburb under the co-operative system by laying out a portion of the Curzon Park estate adjoining Glan Aber Park, Chester. The plans, prepared by Mr. Philip Lockwood, show houses, the rents of which vary from 6*s.* 6*d.* per week to 35*l.* per annum, each house having a fair-sized garden.

THE communal authorities of Constantza, Roumania, have now been authorised to contract a loan for 3,000,000 lei (120,000*l.*) to be utilised in connection with the erection of public buildings, barracks, schools, and slaughterhouses, the construction of baths, paving operations, canal extensions, &c.

ACCORDING to an article in the *Messenger de Sao Paulo*, the city of Sao Paulo, Brazil, will soon undergo a complete transformation. By the co-operation of the city authorities and the Government of the State of Sao Paulo, schemes are to be considered for the construction of new streets and avenues, and the erection of imposing buildings, which will necessitate the expenditure of a large sum of money. This, it is stated, will compel the authorities to levy house duties and to impose other taxes by way of providing the requisite guarantees for the loans which will have to be raised.

**THE
Architect and Contract Reporter.**

FRIDAY, JUNE 2, 1911.

Published weekly, subscription 19s. per annum for Great Britain, and for Colonial and Foreign subscriptions £1 6s. 6d. All business communications to the Managing Director,

P. A. GILBERT WOOD,

Publishing Offices, 6-11 Imperial Buildings, Ludgate Circus, London, England.

Telephone No. 4725 Holborn.

Branch Offices at 43 OLD QUEEN STREET, S.W., Messrs. W. HAY FIELDING & CO. being the representatives for all business purposes.

The Birmingham Offices are at 102 COLMORE ROW.

** Entered in the United States of America as second-class matter.

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EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit the insertion of lengthy communications.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

** As great disappointment is frequently expressed at the nonappearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

ATHENS.—Sept. 25.—An international competition of plans is invited by the Greek Ministry of the Interior (Public Works) for the erection of a Court of Justice at Athens. The cost of the building must not exceed 160,000l. A first prize of 800l., and a second prize of 320l. will be awarded. The Greek Official Gazette, containing particulars (in Greek and in French) may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

NORTHAMPTON.—July 7.—The Borough Education Committee invite architects practising in the borough or county of Northampton to submit on the 7th July plans for a secondary school for girls, to be erected in St. George's Avenue. A plan of the site and a copy of the instructions containing the terms and conditions of the competition may be obtained from Mr. Stewart Beattie, Secretary, Education Offices, 4 St. Giles's Street, Northampton.

WALES.—June 16.—The Cymmer Co-operative Society, Ltd., invite competitive designs for rebuilding business premises at Cymmer, Port Talbot. Deposit 5s. Premiums of 15l. and 5l. will be awarded to plans first and second in order of merit respectively. The Secretary, Co-operative Society, Cymmer, Port Talbot, Glamorgan.

WALES.—July 1.—Competitive designs are invited for chapel, schoolroom, and classrooms to be erected at the junction of St. Alban's Road and Finsbury Terrace, Swansea. Particulars and conditions may be obtained from the Secretary, Mr. D. Walters, 19 Brooklands Terrace, Swansea.

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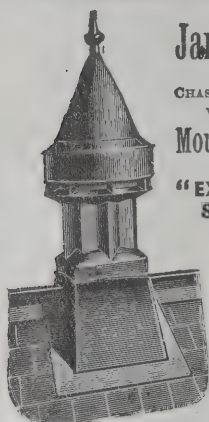
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WHITLEY BAY.—June 7.—The Whitley and Monk-seaton Urban District Council invite architects practising in Northumberland and the city of Newcastle-upon-Tyne to submit designs for the proposed cemetery buildings. A professional assessor has been nominated by the President of the R.I.B.A. to assist in drawing up the conditions and to advise on the relative merits of the various designs. The site-plan and the conditions can be obtained on a written application being made, accompanied by a deposit of 1*l.* 1*s.*, which will be returned to every competitor submitting a bona-fide design. The designs, addressed to the Surveyor, are to be delivered at the Council Offices, Whitley Bay, on or before June 7. Apply to Mr. Augustus Whitehorn, Clerk to the Council, 60 Saville Street, North Shields.

YEOVIL.—The Corporation of Yeovil invite competitive designs as follows:—(1) For laying out a site of about 10 acres of land for the purpose of erecting houses for the working class, and (2) for houses to be erected thereon. In respect of each class of design premiums of 20*l.* and 10*l.* will be awarded. Particulars and conditions of site may be obtained upon deposit of 10*s.* 6*d.* from the Town Clerk, Yeovil.

CONTRACTS OPEN.

AYLESBURY.—June 7.—For alterations to the infirmary at the Union House. Deposit 5*l.* Bank of England note. Mr. F. Taylor, A.R.I.B.A., 7 Bourbon Street, Aylesbury.

BARNARD CASTLE.—June 5.—For the following work at the Auction Mart, viz.: Contract No. 1, cementing and draining; (2) iron pens and stalls; (3) iron roof. Mr. E. C. Surtees, architect, 4 Park Terrace, Barnard Castle, Durham.

BASINGSTOKE.—June 12.—For erection of a new secondary school for 160 girls. Deposit 5*l.* 5*s.* Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

BIGGLESWADE.—June 6.—For alterations and additions to the infirmary at the workhouse. Deposit 1*l.* 1*s.* Mr. W. Jackson, architect, Market Square, Biggleswade.

BINGLEY.—June 22.—For the following works in connection with alterations and additions to Bingley (Mornington Road) Council school, for the West Riding Education Committee, viz.:—Builder, joiner, slater, plumber, plasterer, and painter. The Education Architect, County Hall, Wakefield. Send 1*l.* deposit to the West Riding Treasurer, County Hall, Wakefield.

BRADFORD.—June 20.—For the mason's, joiner's, plumber's, plasterer's, slater's and painter's work in connection with extensions and additions to the medical officer's residence at the Union Workhouse, Horton Lane. Deposit 10*s.* 6*d.* Mr. Fred Holland, architect to the Board, 22 Manor Row, Bradford.

BURY.—June 15.—For execution of certain repairs required at Nos. 50, 52, and 54 Stanley Street, and Nos. 2 to 16 inclusive, Barlow Street. The Borough Engineer and Surveyor, Bury, Lancs.

CALLINGTON.—June 10.—For erecting a Council school at Callington. The Council School, Callington, or Mr. B. C. Andrew, architect, St. Austell.

CLAYTON-LE-MOORS.—June 7.—For erection of bakery in Mercer Street, for the Clayton-le-Moors Co-operative Society. Send names by June 7 to Mr. J. W. Cooper, secretary.

CROFT (DARLINGTON).—June 5.—For erection of new tabling, coach houses, and grooms' accommodation at Hainaby Hall (sole tenders). Send names by June 5 to Messrs. Clark & Moscrop, F.F.R.I.B.A., architects, Feethams, Darlington.

DOVER.—June 21.—For the erection of No. 6 barrack blocks for non-commissioned officers and men at Fort Bur-royne, Dover, in the Eastern Command. Send names and 10*s.* deposit by June 12 to the Director of Barrack Construction, 80 Pall Mall, London, S.W. (See Advertisement.)

DRUMBURGH.—June 10.—For the whole of the work required in alterations and additions to Drumburgh Council school, Cumberland. Mr. J. Forster, M.S.A., 13 Earl Street, Carlisle.

EDINBURGH.—June 12.—For carrying out the following works in connection with the erection of Boroughmuir (New) school, Viewforth, for the School Board, viz.: (1) Mason and brick works; (2) carpenter and joiner works; (3) smith and ironfounder works; (4) slater works; (5) plaster work; (6) glazier work; (7) tile work; (8) plumber work; (9) painter work. Mr. J. A. Carfrae, architect, 3 Queen Street, Edinburgh.

EMBSAY.—For the several works required in erection of a new church. Forward names to Mr. G. D. W. Douglas, architect and surveyor, Halifax Commercial Bank Chambers, Bradford.

EXETER.—June 6.—For the construction of a swimming bath and dressing boxes at the Devon and Exeter Boys' Reformatory. Deposit 3*l.* Messrs. E. H. Harbottle & Sons, architects, County Chambers, Exeter.

EXMOUTH.—June 24.—For erection of a police station and petty sessions room. Deposit 3*l.* Mr. E. H. Harbottle, county architect, Queen Street, Exeter.

GLASGOW.—June 26.—For the construction of a granary at Meadowside, Partick, for the trustees of the Clyde Navigation. The granary to be 312 ft. long by 72 ft. wide, inside dimensions, and 14 storeys in height. The building to comprise two portions, viz., grain bins or silos to contain 20,000 tons of grain, and floor warehouse to store 11,000 tons of grain. Tenders are to be for the construction of the granary in the following methods, viz.: (a) Entire building of reinforced concrete; (b) entire building of reinforced concrete, but with brickwork facing the external walls; (c) silos of reinforced concrete with external walls faced with brickwork; floor warehouse having external walls of brickwork, internal columns of cast-iron, and floors of rolled steel beams and concrete. Tenderers may offer for one or more of the alternative systems of construction. Send 5*l.* deposit to the Trustees' Engineer, Mr. T. R. Mackenzie, general manager and secretary, 16 Robertson Street, Glasgow.

HALIFAX.—June 5.—For the work required in the erection of bandstands, stages, and fencing off for fireworks, &c., on Savile Park, for the Coronation festivities. Deposit 1*l.* Mr. J. Lord, M.I.C.E., borough engineer, Town Hall, Halifax.

HALIFAX.—June 7.—For the various works required in erection of new workshop, Water Lane. Send in names on or before June 7 to Messrs. Jackson & Fox, architects, Rawson Street, Halifax.

HORSFORTE.—For the several works required in erection of St. Margaret's Parish Hall and schools. Forward names to Messrs. Emmsall & Clarkson, architects and surveyors, 7 Exchange, Bradford.

IRELAND.—June 9.—For erection of a dispensary residence and dispensary at Corbally, Downpatrick. Deposit 2*l.* 2*s.* The Boardroom, Workhouse, Downpatrick.

IRELAND.—June 12.—For erection of two semi-detached villas at Newtownards. Mr. T. Houston, architect and civil engineer, Kings Court, Wellington Place, Belfast.

IRELAND.—June 17.—For erection of out offices and stables for the Rathmines Urban District Council. Deposit 1*l.* 1*s.* The Engineer's Office, Town Hall, Rathmines, Co. Dublin.

IRELAND.—June 17.—For erection of a galvanised iron hay and cart shed, for the Rathmines Urban District Council. Deposit 1*l.* 1*s.* Engineer's Office, Town Hall, Rathmines, Co. Dublin.

IRELAND.—July 3.—For the erection of 28 labourers' and artisans' dwellings, for the Birr Urban District Council. Mr. H. Browne, A.M.I.C.E.I., Town Surveyor, Town Hall, Birr.

KIMBERWORTH (ROTHERHAM).—June 9.—For erection of the Kimberworth upper standard school and infants' school. Send names and 2*l.* 2*s.* deposit by June 9 to Mr. Spurley Hey, director of education, Education Offices, Imperial Buildings, Rotherham.

KING'S HEATH.—June 14.—For the erection of a superintendent's lodge in the King's Heath Park, Birmingham. Deposit 1*l.* 1*s.* Mr. A. W. Cross, engineer and surveyor, 23 Valentine Road, King's Heath, Birmingham.

LAUNCESTON.—June 10.—For erecting a Council school. The Council School, Launceston, or Mr. B. C. Andrew, architect to the Committee, Biddick's Court, St. Austell.

LEEK (STAFFS.).—June 6.—For alterations to the Sea Lion Inn, and adjoining property, in Russell Street. Deposit 1*l.* 1*s.* Mr. W. E. Beacham, C.E., surveyor, Town Hall, Leek.

LEOMINSTER.—June 9.—For extension of the Secondary School. Deposit 2*l.* 2*s.* The County Surveyor, Shirehall, Hereford.

LONDON.—June 6.—For the enlargement of Croydon Telephone Exchange. Deposit 1*l.* 1*s.* The Postmaster, Croydon, and at H.M. Office of Works, &c., Storey's Gate, S.W.

LONDON.—June 8.—For providing new flooring, &c., at the infirmary day rooms of the Plashet schools, Upton Park, E., for the Guardians of St. George's-in-the-East. Mr. T. W. Aldwinckle, F.R.I.B.A., architect, 20 Denman Street, London Bridge, S.E.

LONDON.—June 12.—For erection of a refuse destructor for dealing with the refuse of the district, including the provision of the necessary buildings, chimney, boilers, machinery,

&c., for the Barnes Urban District Council. Deposit 1*l.* 1*s.* Mr. G. B. Tomes, A.M.I.C.E., engineer and surveyor, Council House, High Street, Mortlake, S.W.

LONDON.—June 13.—For supplying and erecting the necessary iron and steel work and galvanised iron roofing to cart shed at the Council's Dépôt, Wearside Road, Lewisham. Charge 5*s.* The Town Hall, Catford (Surveyor's Department).

LONDON.—June 14.—For repointing work to the chimney shafts at the workhouse, Hoxton, for the Guardians of St. Leonard, Shoreditch. Mr. F. J. Smith, F.R.I.B.A., architect, Parliament Mansions, Victoria Street, S.W.

LONDON.—June 15.—For erection of an electricity substation at High Street, Wapping, for the Stepney Borough Council. Deposit 5*l.* note. Mr. W. M. Jameson, A.M.I.C.E., Municipal Offices, 15 Great Alie Street, Whitechapel, E.

LONDON.—June 15.—The Guardians of the Wandsworth Union invite separate tenders for (a) painting works, &c., at St. John's Hill Infirmary; (b) additions to engineers' shop at St. John's Hill Infirmary. Deposit 1*l.* for each set. Mr. F. W. Piper, clerk, St. John's Hill, Wandsworth, S.W.

LONDON.—June 27.—Constructional schemes with tenders are invited for the erection in reinforced concrete of new buildings for His Majesty's Stationery Office and Office of Works Stores in Waterloo Road and Stamford Street, S.E. Any system of construction may be adopted for the whole or part of the work. Deposit 3*l.* 3*s.* Mr. R. J. Allison, A.R.I.B.A., H.M. Office of Works, &c., Storey's Gate, S.W. (See advertisement.)

LONGWOOD.—For the various works required in erection of a teasing shed at Cliffe End Mills, Longwood, near Huddersfield. Send names to Messrs. C. F. Mallinson & Son, surveyors, Market Place, Huddersfield.

MACCLESFIELD.—June 10.—For alterations to the Broken Cross St. Thomas's Church of England School. Apply to the Schoolmaster at the school. Rev. H. A. Portbury, official correspondent of the school, Henbury Vicarage, Macclesfield.

MINSTER-IN-SHEPPEY.—June 12.—For the reconstruction of offices and connection to sewer at the Council School. Mr. A. Seymour Baskett, correspondent, 46 High Street, Sheerness.

MINSTER-IN-SHEPPEY (KENT).—June 12.—For the execution of summer repairs required to be carried out at the Council school. Mr. A. Seymour Baskett, correspondent, 46 High Street, Sheerness.

NEWCASTLE-UPON-TYNE.—June 12.—For supply and erection of a single-storey shed about 320 ft. long and 66 ft. wide, for the Trade and Commerce Committee of the Council. The contract will include steelwork, brickwork, corrugated iron roof covering, glazing, sliding doors, &c. Send deposit of 2*l.* 2*s.* to the City Treasurer, Town Hall. The City Engineer's Office, Town Hall, Newcastle-upon-Tyne.

NEWCASTLE-UPON-TYNE.—June 12.—For alterations at Royal Jubilee Council schools, City Road. Send names and 1*l.* 1*s.* deposit by June 12 to the Secretary, Education Offices, Northumberland Road, Newcastle-upon-Tyne.

ROCHDALE.—June 10.—For proposed alterations and additions to St. Peter's Church school. Deposit 2*l.* 2*s.* Messrs. Sykes & Evans, 7 Chapel Walks, Manchester.

ROCHDALE.—June 19.—For erection of nurses' home at the workhouse. Mr. H. H. Clough, architect, Butts Avenue, Rochdale.

ROSS.—June 10.—For the restoration of the tower of the Ross Church, Herefordshire. Messrs. Smith & Watson, High Street, Ross, and Messrs. Nicholson & Hartree, architects, Offa Street, Hereford.

ROTHERHAM.—June 14.—For erection and completion of a small-pox hospital at Kimberworth, comprising administration, laundry, and ward blocks, boundary walls, construction of approach roads, laying out of grounds, &c. Deposit 2*l.* 2*s.* Mr. E. B. Martin, A.M.I.C.E., borough engineer, Town Hall, Rotherham.

ROTHLEY (LEICS.).—June 10.—For execution of additions and alterations to the workhouse. Mr. T. Forward, clerk, Union Offices, Mountsorrel, Loughborough.

ST. ALBANS.—June 8.—For alterations and additions to the School of Art and Technical Buildings. Deposit 2*l.* 2*s.* Mr. Urban A. Smith, county surveyor, Hatfield.

ST. AUSTELL.—June 6.—For erection of a residence at King's Avenue (East Hill Estate). Mr. B. C. Andrew, M.S.A., architect, Biddick's Court, St. Austell.

SCOTLAND.—June 10.—For the mason, wright, plumber, slater, plaster, and painter work to be carried out at Old

Crookston Farm, for the Govan District Lunacy Board. Mr. J. Mitchell, clerk, 7-8 Carlton Place, Glasgow.

SEVENOAKS.—June 7.—For alterations and additions to the Infirmary at the Union Workhouse at Ide Hill. Deposit 1*l.* 1*s.* Mr. Ernest Pawley, architect, 86 High Street Sevenoaks.

SHEFFIELD.—June 9.—For the works of all trades required in erection of refreshment pavilion and public convenience at Norfolk Park. The City Architect, Town Hall, Sheffield.

SKELMERSDALE.—For additions to endowed school, Skelmersdale. Apply to Messrs. Medcalf & Medcalf, architects, Railway Road, Ormskirk, and 7 Moorfields, Liverpool.

SKIDBY.—June 24.—For the following works, for the East Riding of Yorkshire County Council Small Holdings and Allotments Committee, viz.:—Erection of houses and farm buildings and the formation of roads at the Town End Farm Skidby. Deposit 1*l.* 1*s.* Mr. H. T. Tate, county land agent County Hall, Beverley.

SOUTHALL.—June 13.—For supplying and fixing entrance gates and wrought-iron unclimbable fencing and other appurtenant works at Southall Park and the Recreation Ground, Mr. Reginald Brown, A.M.I.C.E., F.S.I., &c. engineer and surveyor, Public Offices, Southall, Middlesex.

SOUTH ELMSALL.—June 7.—For the various works required in erection of new business premises, South Elmsall, Yorks. Send names by June 7 to Messrs. Crawshaw & Wilkinson architects, 13 Regent Street, Barnsley.

SOUTH ELMSALL.—June 9.—The West Riding Education Committee invite whole or separate tenders for the following works: South Elmsall, New Council School (builder, joiner, tiler, plumber, plasterer, painter, ironfounder and smith, an asphalt). The Education Architect, County Hall, Wakefield. Send 1*l.* 1*s.* deposit to the West Riding Treasurer Wakefield.

SOUTHPORT.—June 14.—For the construction of a carriage shop, offices, footbridge, &c., at Meols Cop, for the Lancashire and Yorkshire Railway Company. The Engineer's Office, Hunt's Bank, Manchester.

SOYLAND (YORKS.).—June 12.—For the following work at the Soyland, Ripponden Stones Council school, for the West Riding Education Committee, viz.:—(1) Provision of a movable screen; (2) plumber's work, consisting of ventilation and flushing apparatus. The Divisional Clerk, Education Office, Sowerby Bridge.

STOCKPORT.—June 24.—For the following works in connection with the Dialstone Lane Hospital extension, for the Corporation, viz.:—(1) Buildings, (2) draining and road making. Deposit, contract (1) 3*l.* 3*s.*; contract (2) 2*l.* 2*s.* Mr. J. Jepson, architect, 35 Great Underbank, Stockport.

SWAFFHAM.—June 6.—For building new operating room new lavatories, and other alterations, at the Cottage Hospital. Plans and specifications can be seen at Mr. J. A. Gould's, hospital secretary, Swaffham, Norfolk.

THORNTON-LE-FEN (Lincs.).—June 22.—For alteration to school at Thornton-le-Fen, for the Lindsey County Council Education Committee. Send 1*l.* 1*s.* deposit by June 12 to the Secretary, 286 High Street, Lincoln.

TIBSHELF.—June 13.—For alterations to Colliery Council schools at Tibshelf, Derbyshire. Deposit 1*l.* 1*s.* Mr. G. H. Widdows, A.R.I.B.A., architect to the committee, St. Mary Gate, Derby.

TROWBRIDGE.—June 13.—For carrying out work in alterations and additions at Bromham Council school, Wilts. Deposit 1*l.* 1*s.* Mr. J. G. Powell, county surveyor, Trowbridge.

TRURO.—June 8.—For alterations at Mill House, Malpa Road, and other work connected therewith. Mr. F. A. Barnes, A.M.I.C.E., city engineer and surveyor, Municipal Buildings, Truro.

WAKEFIELD.—June 8.—The West Riding Education Committee invite whole tenders for the following works: Adwick-le-Street, Woodlands new Council school, Kirkburton Council School, South Emsall Council school, asphaltting of play grounds. Education Architect, County Hall, Wakefield. Send 1*l.* deposit in each case to the West Riding Treasurer County Hall, Wakefield.

WALES.—For additions to the Gwerthonor Hotel at Gilfach Bargoed, for Messrs. Crosswells' Cardiff Brewery, Ltd. Send applications and deposit of 2*l.* 2*s.* to Mr. J. T. Jenkins M.S.A., architect and surveyor, Porth, Glam.

WALES.—For the erection of a residence in Fields Park Avenue, Newport. Messrs. A. Swash, F.R.I.B.A., & Son Midland Bank Chambers, Newport, Mon.

WALES.—For erection of four houses in Ogmores Vale. Mr. J. Morris Williams, architect and surveyor, Blackmill.

WALES.—For the rebuilding of the Ivy Bush Hotel, Pontardawe. Mr. J. C. Rees, M.S.A., architect, Parade Chambers, Neath.

WALES.—June 7.—For the work required in making roads and footpaths, laying subsoil and surface-water drains, building retaining walls, erecting messroom and bier house, entrance gates, and railings, and any other work necessary in the construction of a burial ground at Cwm, for the Ebbw Vale Urban District Council. Deposit 2*l*. Mr. T. J. Thomas, town engineer and surveyor, Ebbw Vale, Mon.

WALES.—June 7.—For erection of an institute and library at Nantyglo, Monmouthshire. Mr. W. W. Neat, architect, 70 King Street, Brynmawr.

WALES.—June 8.—For additions and alterations to Penuel Calvinistic Methodist Church, Ebbw Vale. Deposit 1*l*. 1*s*. Messrs. Habershon, Fawcner & Co., F.R.I.B.A., architects, 41 High Street, Newport, Mon.

WALES.—June 8.—For erection of two rooms at the Union Workhouse, Merthyr Tydfil, for the accommodation of steam disinfectors. Mr. T. Roderick, architect, Clifton Street, Aberdare.

WALES.—June 9.—For building a farm house at Cwm-porthman, Blaenporth. Apply to Mr. W. H. Harris, Cwm-porthman.

WALES.—June 10.—For the general builders' work in alterations and repairs of the Town Hall, Pembroke. Deposit 5*s*. Mr. H. R. Crabb, A.R.I.B.A., Bush Street, Pembroke Dock.

WALES.—June 10.—For the renovation of front and sides of Broad Street Baptist Chapel, Blaenavon: (1) Repairs, (2) painting and glazing. Mr. H. M. Davies, chemist, Blaenavon.

WALES.—June 10.—For erection of vestry and offices and decorating Bethania Congregational Chapel, Talgarth. Mr. D. Jones, Brynhyfryd, Talgarth, Brecon.

WALES.—June 12.—For building a new C.M. Chapel at Ferryside, Carmarthen. Mr. D. Lewis, Bristol House, Ferryside.

WALES.—June 12.—For erection of shops at Risca, for the Blaena Industrial and Provident Society, Ltd. Deposit 3*l*. 3*s*. Mr. S. H. Hutchins, architect, Risca, Mon.

WALTHAM.—June 12.—For new organ chamber and extension to vestry at the Parish Church, Waltham, near Grimsby. Mr. H. C. Scaping, architect, Court Chambers, Grimsby.

WINCHESTER.—June 5.—For proposed additions and alterations to the City Arms Inn property. The Winchester and District Industrial Co-operative Society, Ltd., 4 The Square, Winchester.

WOOD GREEN.—June 7.—For the execution of certain alterations and additions to the Town Hall. Send names by June 7. Mr. W. P. Harding, clerk, Town Hall, Wood Green.

WOOD GREEN.—June 13.—For the execution of summer repairs at the several schools under their control, for the Wood Green Education Committee. Deposit 1*l*. 1*s*. The Engineer and Surveyor, Town Hall, Wood Green.

WORSBROUGH.—June 10.—For the whole or any portion of the works required in connection with erection of a house on Mount Vernon Road, Worsbrough, Yorks. Mr. A. Whitaker, architect and surveyor, Kingwell Close, Worsbrough Dale, Barnsley.

WREXHAM.—June 3.—For erection of the following works, for the Denbighshire Education Authority:—(a) Alteration and additions to the Broughton Pentre boys' Council school. The following works will be let in two separate contracts:—Contract 1, permanent works, which will include the foundations, chimneys; contract 2, the superstructure. (b) Erection of a semi-permanent school building to accommodate 150 infants, in connection with the Penyaec Council, &c., school, near Ruabon; (c) erection of a semi-permanent school building to accommodate 80 children at Graianrhyd, near Mold. Send names by June 3 to Mr. W. D. Wiles, county architect and surveyor, 425 High Street, Wrexham.

WREXHAM.—June 6.—For the following works, for the Corporation, viz.:—(1) Alterations to the market hall shop; (2) alterations and extensions to the conveniences, windows, &c., at the Victoria Council schools; (3) painting at the general market and shops in Henblas Street; (4) painting of offices at the Willow Depot; (5) cleaning down and painting cemetery superintendent's lodge. Mr. John England, borough engineer, Willow Road.

THE Governors of the Radcliffe Infirmary, Oxford, have adopted plans prepared by Mr. E. Warren, architect, for proposed extensions. The scheme will cost over 25,000*l*. Tenders are to be invited shortly for the execution of the work.

TENDERS.

BASINGSTOKE.

For erection of a drill hall for the County of Southampton Territorial Force Association, Messrs. HAIR & BUCKNILL, architects, Southampton.

Jenkins & Sons	£2,390	0	0
Cockerell	2,365	0	0
Kirk & Randall	2,300	0	0
Stevens & Co.	2,280	0	0
Goodall	2,259	0	0
Waldron & Cox	2,248	9	8
Colborne	2,229	11	0
Nichol	2,224	0	0
Mussellwhite & Sapp	2,196	0	0
TIGWELL, Basingstoke (accepted)	2,048	0	0

CHELMSFORD.

For reslating, &c., Shire Hall. Mr. FRANK WHITMORE, county architect, Chelmsford.

Bailey	£165	3	9
Johnson & Hawkes	161	15	6
Eglin & Co.	161	3	6
Gowers	154	10	0
Potter & Son	147	0	0
Simmons (recommended)	146	15	6

All of Chelmsford.

For alterations and additions to the Friars Council School. Mr. W. H. PERTWEE, architect, Chelmsford.

Eglin & Co.	£1,640	0	0
Mason & Son	1,520	0	0
Smith & Son	1,497	0	0
Burtwell	1,489	0	0
Potter & Son	1,417	0	0
Parren & Son	1,405	0	0
Grimwood & Sons	1,395	0	0
Choat & Son	1,384	0	0
Truggett	1,370	0	0
Fryd	1,367	0	0
Johnson & Hawkes	1,365	0	0
Gibson & Sons	1,354	0	0
Bailey	1,344	0	0
RAYNER, East Hanningfield (accepted)	1,285	0	0

LONDON.

For reconstructing the heating apparatus at the St. Andrew's Street School, Clapham.

Stevens & Sons	£1,055	0	0
Cannon & Sons	1,000	0	0
Grundy, Ltd.	987	0	0
Yetton & Co.	959	0	0
Tilley Bros.	937	4	6
Cannon & Hefford	826	0	0
Brightside Foundry and Engineering Co.	825	0	0
Cash & Co., Ltd., Caxton House, S.W. (recommended)	798	0	0
Architect's estimate	820	0	0

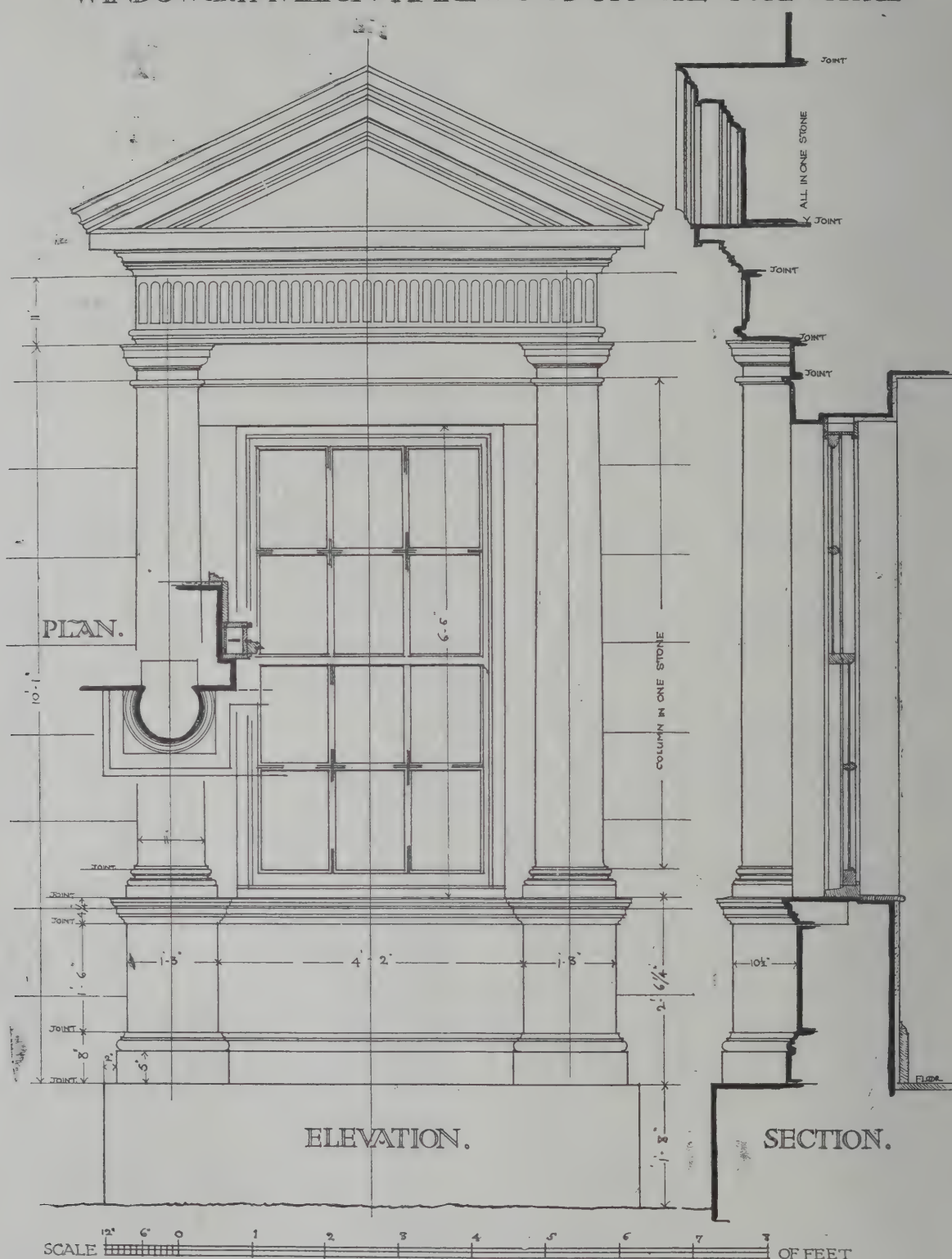
For the enlargement by 40 places of the Essendine Road School, Paddington, for physically defective children, and the provision of a new cookery centre.

Stevens & Sons	£2,012	0	0
Garrett & Son	1,985	0	0
Marchant & Hirst	1,975	0	0
Roberts & Co.	1,920	0	0
Soole & Son	1,900	15	11
Smith & Son	1,891	0	0
Neal	1,854	0	0
King & Son	1,854	0	0
Godson & Sons	1,769	0	0
Lole & Co.	1,752	0	0
T. D. Leng, Deptford (recommended)	1,725	0	0
Architect's estimate	1,690	0	0

For the cleansing, repainting, &c., of the Grosvenor Road embankment railings and dock entrance bridges and the Albert Embankment dock entrance bridges, for the L.C.C.

Vigor & Co.	£475	0	0
King & Son	351	0	0
Woolaston & Co. (incomplete tender)	273	7	9
Markham & Markham	207	0	0
W. F. Blay, Ltd., Dartford (recommended)	128	17	8
Chief engineer's estimate	220	0	0

"THE ARCHITECT" STUDENTS' SKETCHING AND MEASURING CLUB.
 WINDOW OF A PAVILION: HAREWOOD HOUSE: YORKSHIRE:



FROM A MEASURED DRAWING BY "LE QUAYT."

LONDON—continued.

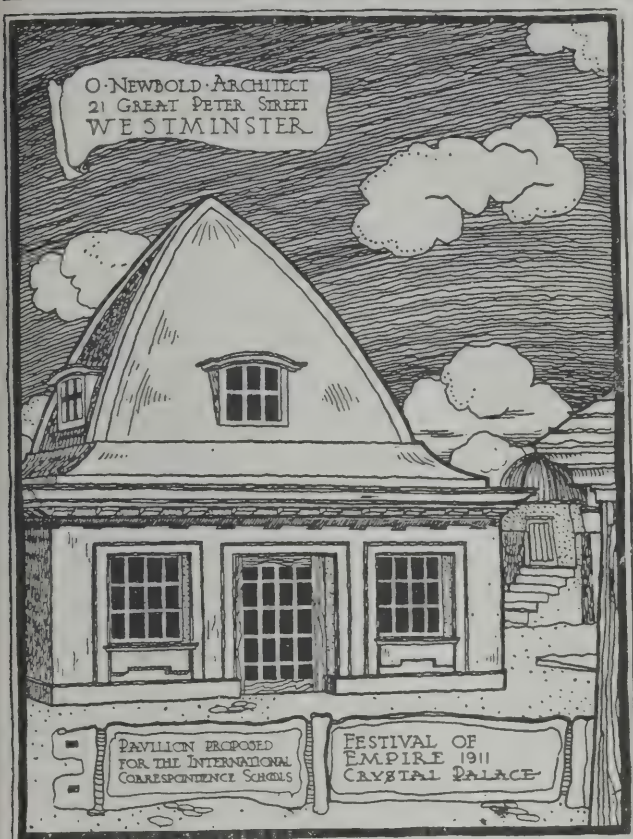
For the erection of a secondary school for 468 girls on the Ancona Road site, Woolwich.

Johnson & Co.	£23,333	0	0
Parker & Sons	23,291	0	0
Godson & Sons	22,919	0	0
Leng	22,839	0	0
Holliday & Greenwood	22,781	0	0
Wallis & Sons	22,779	0	0
Patman & Fotheringham	22,343	0	0
J. & M. Patrick	22,219	0	0
Kirk & Randall	22,213	0	0
E. Lawrance & Sons	22,157	0	0
J. & C. Bowyer	21,952	0	0
H. L. Holloway, Deptford (recommended)	21,862	0	0
Architect's estimate	21,889	0	0

LONDON—continue.

For the extension of the L.C.C. tramcar shed at Streatham Hill by the erection of a separate building on the site of No. 31 Streatham Hill.

Colls & Sons	£14,787	0	0
F. & H. F. Higgs	14,525	0	0
J. & C. Bowyer	13,849	0	0
Wall, Ltd.	13,843	0	0
Holloway Bros. (London)	13,600	0	0
Patman & Fotheringham	13,593	0	0
H. L. Holloway	13,468	0	0
Kerridge & Shaw	13,327	0	0
Kirk & Randall	13,322	0	0
Rowley Bros., Tottenham, N. (recommended)	12,997	0	0
Architect's estimate	13,900	0	0



A £500 HOUSE AT ROMFORD GARDEN SUBURB.
MESSRS. FYVIE & WILSON, Architects. Drawn by Mr. O. NEWBOLD, R.I.B.A.

LONDON—continued.

For the execution of the wiring and the supply of the necessary fittings for lighting Kennington fire station by electricity.

Bryden & Sons	£340 0 0
Tilley Brothers	276 10 0
Leonard & Co., 4 Soho Street, W. (recommended)	205 0 0
Chief engineer's estimate	260 0 0

For strengthening the floors of the upper halls at the Forster School, Islington.

Lawrence & Sons	£480 0 0
Williams & Son	474 0 0
Leng	474 0 0
L. H. & R. Roberts	471 0 0
McLaughlin & Harvey	465 14 4
J. & C. BOWYER, Upper Norwood (accepted)	387 0 0

MALDON.

For the erection of Council school for boys and girls and a cookery centre. Mr. A. S. R. LEY, architect, 214 Bishopsgate, E.C., and Frinton-on-Sea.

Gluyas	£9,473 0 0
Kidman Bros.	7,641 0 0
McCormick & Sons	7,489 0 0
Irwin	7,303 0 0
Grimwood & Sons	7,287 0 0
F. & E. Davey	7,285 0 0
Bloxham	7,230 0 0
Fryd	7,077 0 0
Gibson & Sons	6,989 0 0
Jones	6,988 0 0
Kenney	6,965 0 0
Grimwood & Sons	6,951 0 0
Brown	6,898 7 0
Potter & Son	6,875 0 0
Burtwell	6,849 0 0
Gladwell	6,812 0 0
Parkington & Son	6,700 0 0
Bailey	6,473 0 0
Parren & Son	6,472 10 0
Willmott	6,448 0 0
Moss	6,440 15 2
Rayner	6,372 0 0
Mason & Son	6,300 0 0
DOWSING & DAVIS, Romford (accepted)	6,100 0 0

PORTSMOUTH.

For erection of a tuberculin dispensary, for the Corporation.

Salter	£420 0 0
Woods & Co.	339 0 0
Tanner	309 0 0
SOUTH WESTERN BUILDING AND STEAM JOINERY Co., Gosport (accepted)	290 0 0

SHILLINGTON (BEDS.).

For erection of a memorial hall. Mr. J. SHILCOCK, architect, Hitchin.

French	£1,146 2 0
Willmott & Sons	1,120 0 0
Redhouse & Son	1,116 0 0
Bailey & Co.	1,098 0 0
Spratt	1,097 0 0
Foster & Co.	980 0 0
Coleman & Co.	975 0 0
Wright	940 0 0
Rooke	900 0 0

SHREWSBURY.

For erection of a tobacco factory. Mr. A. E. WILLIAMS, architect and surveyor, Shrewsbury.

G. & W. Edwards	£4,949 0 0
Hayes	4,800 0 0
Morris & Sons	4,785 0 0
Pritchard	4,770 0 0
Pattinson & Sons	4,693 0 0
Lovatt, Ltd.	4,687 0 0
Barnsley & Sons	4,600 0 0
Bickerton	4,598 0 0
H. PRICE, Shrewsbury (accepted)	4,585 0 0
Pace	4,567 0 0
Gough & Sons	4,560 0 0

WEYBRIDGE.

For business premises in Queen's Road. Messrs. CRICKMAY & Sons, architects, 13 Victoria Street, Westminster, S.W.

Greenfield	£3,484 0 0
Nicholson	3,400 0 0
Horsell	3,333 1 2
Ranger	3,279 6 0
Gaze & Sons	3,259 0 0
Willis	3,200 0 0
Kemp & Co.	3,189 0 0
Drowley & Co.	3,183 0 0
F. & H. F. Higgs	3,161 0 0
Potterton	2,957 0 0
ANNETT, Walton-on-Thames (accepted)	2,809 0 0

WALES.

For new schools at Gellifaelog for 1,150 children, for the Merthyr Tydfil Education Committee, viz.: (1) Infants' school for 450 children, (2) boys' school for 350 children, (3) girls' school for 350 children, (4) manual instruction and combined domestic science block, (5) playground, drainage, &c. Mr. J. LL. SMITH, M.S.A., architect, Aberdare.

Howells	£26,652	0	0
Stephens & Co.	26,416	0	0
Walters & Son	24,817	0	0
T. Allan, Ltd.	24,725	0	0
R. Jones	24,406	0	0
Evans Bros.	24,234	0	0
Davies & Sons	24,000	0	0
Jones Bros.	23,680	0	0
Colborne	22,999	0	0
Morgan & Son	22,887	0	0
WILLIAMS & SON, Dowlais (accepted)	21,921	0	0

THE SURVEYORS' INSTITUTION.

THE annual general meeting of the Surveyors' Institution was held on May 29 at 12 Great George Street, Westminster, S.W. According to the forty-third annual report the grand total of membership is now 4,500, which figure marks the highest number yet attained, and is an increase of 157 since May of last year. The balance-sheet shows receipts amounting to 14,633l., and current expenses of 9,979l.

During the year 905 candidates presented themselves for the Institution Examinations, being 152 more than in 1910, and 130 more than the previous record in 1907. This great increase must be looked upon as to some extent of a temporary nature, the closing of the doors of membership after October 1913, to all who have not passed both the Intermediate and Final Examinations having the effect doubtless of inducing candidates to come up before that date if possible. The percentage of passes was 67.15 in the Preliminary and 67.18 in the Professional Examinations.

The successful candidate for the Institution Scholarship of 80l. per annum tenable at Cambridge University was Mr. P. D. Sturge, a great-nephew of the late Mr. William Sturge, President of the Institution in 1878. No scholarship was awarded at Oxford University, but for those in connection with which the successful candidates had the choice of the University at which they would take their course the competition was encouraging.

The Council remind members that these Scholarships, which are of an annual value of 50l. or 60l. respectively, and are tenable for three years, two being offered yearly, may be held at any University selected by the successful candidates other than Oxford or Cambridge, which have their own Institution Scholarships. The course of study, too, is not restricted, candidates being allowed to choose the course they elect to follow, provided that it is one sanctioned by the Council as bearing on the training and practice of a surveyor.

After careful consideration the Council awarded the Gold Medal for the best Paper read at an Ordinary General Meeting during the Session 1909-10 to Mr. W. R. Davidge in respect of his Paper on "Town Planning," which both in the interest of its matter and the ability of its compilation compares not unfavourably with those which have proved successful in the past.

The possibility of an extension of the Institution premises over Princes Mews to the new street at the back, referred to in the last Annual Report, has now practically been settled. Mr. Paul Waterhouse, F.R.I.B.A., has prepared plans extending the Lecture Hall and the Council Chamber, and making use of the ground floor thereunder for the staff offices, which are at present much scattered. This will not only allow the ordinary work of the Institution to be more conveniently carried on, but will also provide both a ground-floor lavatory and improved accommodation for writing and arbitrations. The elevation to the new street proposed by Mr. Waterhouse is a dignified one, in accord with the existing building, and the Council feel that when the extension is complete with the additional frontages the Institution will be housed in a manner befitting the position which it has attained.

Some years ago the Council thought it desirable to issue a Memorandum to all public bodies, drawing their attention to the serious objections to the practice of inviting quantity surveyors to tender for employment. While there is reason to hope that this practice is certainly not extending, a case was recently brought to the notice of the Council in which

surveyors were asked to compete against each other in respect of the time within which the work was to be completed, a method almost equally to be deprecated as subversive to accurate work. The original Memorandum was therefore extended to cover this case, and has again been widely issued throughout the United Kingdom, a course which it is hoped may be followed by similar good results to those which were associated with the issue of the ordinal Memorandum.

WESTERN CANADA NOTES.

[By A CORRESPONDENT.]

WORK on the new union station for the Canadian Pacific and Canadian Northern at Regina will be started soon. Regina is experiencing a building boom which exceeds anything of former years. Saskatoon is living up to its reputation as one of the liveliest among many lively cities. Building permits for April went to 1,188,000 dollars. The city will spend 1,000,000 dollars this year on local improvements, 90,000 dollars for concrete walks alone. The City Council approved an agreement which will supply Saskatoon with natural gas for industrial purposes. A twenty-year franchise will be granted, and the agreement will be void if gas in sufficient quantity is not supplied within eighteen months. Among many improvements to the business facilities of Saskatoon Mr. J. F. Cairns is to build a big department store, the best in Saskatchewan.

Prince Albert building permits for April show another remarkable increase over last year, which was the record to date. Figures are: April 1910, 17,550 dollars; April 1911, 162,355 dollars; first four months, 1910, 37,525 dollars; corresponding period, 1911, 319,635 dollars.

The burgesses of Edmonton, Alberta, have approved of twenty-three money by-laws placed before them by the City Council, authorising aggregate expenditures exceeding 700,000 dollars for improvements and betterments to various city services. The most important by-law was one covering an expenditure of 250,000 dollars for increased equipment at the power-house and pumping station.

The City Council has decided to accept the terms offered by the Dominion Government in regard to the privilege of developing hydroelectric power at Pelican Rapids, some 200 miles north of here on the Athabasca River. The city is to commence actual construction in 1912, and must be in a position to actually deliver 10,000 horse-power in Edmonton in 1916. The city has the right to ultimately develop 60,000 horse-power.

An important industrial enterprise was successfully promoted at Edmonton during the past few days. This is the Edmonton Portland Cement Co., Ltd., owning extensive marl deposits at Entwistle, on the Pembina River, to the west of Edmonton. A strong directorate has been formed, including a number of the most successful business men, with Lieutenant-Governor Bulyea as chairman. Construction is to be commenced at once, and the plant is to be in operation early in the season of 1912.

The Canadian Pacific Railway is to have a new irrigation and colonisation building at Calgary. The structure will be large, commodious, and thoroughly in keeping with the dignity of the Corporation and the magnitude of the enterprise it is to serve.

THE RUSSIAN TIMBER INDUSTRY.

THE Russian Empire occupies the first place among the nations of the world in the extent of its timber resources, the value and quality of two-thirds of which are practically unknown. The total area of the Russian Empire is 8,647,657 square miles, or about one-seventh of the entire land area of the globe, and 39 per cent. of the surface of the Empire is under forests. Those in European Russia cover an area of 474,000,000 acres; Finland, 50,500,000; Poland, 6,700,000; Caucasus, 18,600,000; total, 549,800,000. In the Ural provinces forests cover 70 per cent. of the area; in the northern provinces 68 per cent., and in the four lake provinces 57 per cent. The Government owns 65 per cent. of these forests, possessing in European Russia, 285,598,941 acres, Caucasus, 12,826,387; Asiatic Russia, 360,519,435; Amur region, 288,742,000; total, 947,686,763. Twenty-three per cent. of the forests belong to the landed proprietors, and 9 per cent. to the peasantry. It is estimated that in Western Siberia alone there are 465,000,000 acres in virgin forest, and Eastern Siberia, although not quite so rich in timber, has sufficient forests for the world's supply of timber for years to come. According to the American Consul at Moscow, the largest

timber districts in European Russia are in the north. The four Governments of Olonetz, Archangel, Vologda, and Viatka, comprising a total area of 650,000 square miles, are almost entirely covered with timber, but the greater part has never been explored by civilised man, though expeditions are now being formed for the purpose of investigating the immense resources of the country. The State forests during a recent year yielded 1,286,560,000 cubic feet of lumber, the Department of Forestry realising in round numbers for the sale of timber, rent of lands, &c., 6,500,000*l.* The expenditure, including 160,000*l.* for cutting trees and sawing logs, amounted to 1,400,000*l.*, thus leaving a profit to the State of 5,100,000*l.* It is stated officially that the reafforestation of State lands provides for more than the amount cut from the forests each year. The above figures do not include the timber lands owned by private parties in European Russia. They are divided as follows:—Imperial appanages, 14,274,500 acres; private landowners, 151,072,000; peasants, 29,210,000; joint-stock companies, factories, works, churches, &c., 6,853,500 acres. The Russian timber industry comprises 1,428 factories, saw-mills, planing establishments, wooden-box factories, piano factories, &c., the number of hands employed being 80,000, and the value of the annual output 16,000,000*l.* This industry is one of the greatest in the Empire, and offers many possibilities, which should not be neglected by manufacturers of requisite machinery. In a recent year Russia imported saw-mill machinery and wood-working machinery to the value of 17,500*l.* and 56,000*l.* respectively. Timber ranks second in the exports of Russia, preceded only by grain.

LONDON SMOKE NUISANCES.

ACCORDING to the report of Dr. Wm. Collingridge (Medical Officer of Health for the City of London) nine cases of smoke nuisance were reported during 1910. The number of observations recorded amounted to 360, as against 237 noted at fourteen premises in 1909. The service of notices upon offenders resulted in the abatement of the nuisances in all cases, and therefore there was no occasion to take further action in the matter.

In the reports for previous years attention has frequently been invited to the necessity for amendment in the law with a view to strengthening the City's powers and those of the Metropolitan Borough Councils for more completely abating smoke nuisances. In the annual report for 1909 reference was made to certain sections of the London County Council (General Powers) Bill. This Bill has resulted in the passing of the London County Council (General Powers) Act, 1910; but this, as far as smoke nuisances are concerned, does not appear to effect much improvement.

As frequently reiterated, the pall of darkness so often hanging over London is undoubtedly largely due to the smoke from the chimneys of private dwelling-houses, the factory chimney as a rule contributing but a small portion of the whole, and while the Acts of Parliament under which we are governed permit private dwelling-houses to send forth black smoke in unlimited quantity, and any premises other than private dwelling-houses to send forth unlimited smoke of any sort provided it be not black, any drastic mitigation of the evil is improbable.

The most useful alteration of the law proposed by the Bill mentioned, viz. that any chimney (not being the chimney of a private dwelling-house) sending forth smoke in such quantity as to be a nuisance shall be a nuisance liable to be dealt with summarily (thus omitting the word "black," which still obtains), has not been retained in the Act as passed, thus continuing the existing difficulty of local authorities in taking offenders into Court, and necessitating the proof that the smoke causing the nuisance was black.

Annoyances are still reported by occupiers of lofty buildings from chimneys at a lower level. Proprietors of restaurants and grills occasionally give trouble to their neighbours when lighting or forcing their fires and by improperly burning refuse, but it is to be noted that the atmosphere is now much less dense than in former years, and in the summer season it is noticeable that on many afternoons, while clouds of smoke overhang adjoining districts, but little smoke is seen in the clear air of the City.

THE contract for the reconstruction of the Caledonian Railway Goods Station at Aberdeen, amounting to about 60,000*l.*, has been placed with Messrs. Hugh Symington & Sons, Glasgow. The work does not include the alterations of the permanent way. The work should be completed by about the end of next year.

VARIETIES.

THE Board of Management of Dudley Hospital have decided to erect a new Eye Infirmary at a cost of 10,000*l.*

THE principal linings granted at Glasgow Dean of Guild Court last week were:—Cowlaire Co-operative Society, Ltd., 19 Angus Street, Springburn, to add to creamery in Kemp Street; J. & D. Hamilton, Ltd., 118 Queen Street, to erect a building to be used as offices at their works in Stirling Street and Port-Dundas Road; Western Shops Company, Hyndland, to erect shops and offices at the corner of Hyndland Road and York Drive.

At the quarterly meeting of the Abingdon Town Council a report was received from the Estates Committee recommending the expenditure of 1,100*l.* in altering and renovating the Municipal Buildings. The scheme comprises stripping and renewing the roof of the Council Chamber, renovating the interior of the room, adapting the old Grammar School room so as to make it suitable for a second dining-room, and repairing a cottage adjoining.

A LARGE scheme for the extension of the Rochdale Infirmary is under consideration. The proposal is to provide a two-storeyed ward to contain 24 beds, a new operating theatre, a steam laundry, an enlargement of the out-patients' department, a remodelling of the ophthalmic and x-rays departments, and the construction of an electric hoist. The extension is expected to cost about 16,000*l.* The local King Edward Memorial Fund for the extension of the Infirmary now amounts to 18,500*l.*

At the last meeting of the Broughty Ferry Dean of Guild Court plans, involving an expenditure of 5,900*l.*, were passed. The plans for alterations at St. Mary's Episcopal Church, at a cost of 1,600*l.*, were, with slight alterations, approved. The plans for a Masonic Hall in Brook Street, for the Broughty Castle Lodge, shows sitting accommodation for 240, with kitchen and other adjuncts for Masonic purposes. Work is shortly to be commenced on the erection of a new school at a cost of 10,000*l.*

THE Streets Committee of the Bolton Council have approved the following plans:—Mr. A. Maginnis, amended plan for six houses, Deane Church Lane; Messrs. James & Joseph Bolton, new streets and levels off Willows Lane; Mr. W. Parker, six houses, Anglia Grove; Messrs. J. Marsden & Sons, new boiler-house, Coe Street. A plan submitted by the Education Committee for a school in Wolfenden Street was disapproved, with a recommendation that such plans be reconsidered by the Education Committee, having regard to the fact that part of the site of the proposed school is tipped up land, also that in the opinion of this committee it would be advisable to set back the proposed building in order that a greater portion of the playground may be on the southerly side of the school. At a subsequent meeting the plans were approved, subject to the Borough Engineer being satisfied that the material of the ground proposed to be utilised for such school has become consolidated sufficiently for the purpose of building thereon.

TRADE NOTES.

OZONAIR, LTD., 96 Victoria Street, Westminster, S.W., have received an order to instal the Ozonair system of ventilation in the whole of the stations and tunnels of the Central London Railway. This must certainly be one of the most difficult and interesting ventilation schemes yet attempted, and it is a very high testimonial to this Company's system that it should have been selected. The method which will be adopted in the case of the Central London Railway will be to fix in each of the thirteen stations a complete plant. The total capacity of the thirteen plants will be about ninety million (90,000,000) cubic feet of pure clean air per day. There will be over two miles of ducts, and every point in the whole system has been carefully thought out to provide a perfect system of ventilation to add to the comfort of the public.

As in former years, the fire protection arrangements at the Bath and West and Southern Counties Agricultural Show, which opened at Cardiff on May 31, are in the hands of Messrs. Merryweather & Sons. Motor and horse-drawn engines are in readiness at their fire station on the ground, whilst hydrants, hose and fittings, as well as small portable appliances, are placed about the yard. A detachment of the Merryweather Brigade is on duty day and night. There is also on view a large exhibit of fire appliances and water supply apparatus for country houses, farms and estates, as well as a selection of the firm's patent spraying apparatus.

THE HYGIENIC ASPECTS OF ILLUMINATION AND RECENT PROGRESS IN ILLUMINATING ENGINEERING.

(Concluded from May 19.)

The Value of Measurements of Illumination.

BEFORE passing on to my concluding remarks, I should like to lay special stress on the value of actual measurements of illumination. Considerable progress has recently been made in the direction of producing simple and reliable instruments for this work, and I have here an apparatus which was recently used in a series of investigations of lighting conditions in schools and libraries in London recently undertaken by myself in conjunction with Mr. J. S. Dow, and presented before the Illuminating Engineering Society. I mention this merely to show that such measurements can now be made with comparative ease and security, and that they may be of considerable service in preserving a record of daylight and artificial conditions. One of the points brought out by these investigations, for example, was the great difference in the distribution of daylight and artificial light in the average interior. In some cases the daylight illumination at different parts of a room varies to a far greater extent than does artificial illumination; in some cases examined the range was as high as 30 to 1.

Reference has already been made to the enormous variations in daylight that may occur from day to day, or even from minute to minute. But until we have adequate actual records of measurement of such conditions, the scientific treatment of daylight illumination of interiors is very difficult. It is only when such records are prepared that we gain an indication of the right course to be pursued. The discussion on school lighting which I have just mentioned, for example, led some of the surveyors and medical officers of health present to lay stress on the importance of designing narrow class-rooms in which the distance from windows to the back of the room is not too great.

If this depth exceeds a certain value, the old rule that the window area should not be less than one-fifth of the floor area does not lead to satisfactory results; on this account Engelbracht, in Hanover, has suggested as preferable the formula

$$f = \frac{F}{5} \cdot \frac{t^2}{36}, \text{ where } f = \text{window area in square metres.}$$

$F = \text{floor;}$
 $t = \text{depth of classroom in metres.}$

However, even at present, it is probable that, with a proper study of the record of daylight conditions available, one could foretell the average intensity of illumination at different parts of the year, given plans of an interior and the knowledge where it is to be erected. If more trouble were taken in this respect beforehand it is possible that the number of failures, as regards daylight illumination in interiors, might be considerably reduced.

One particular matter, special instance of the value of precise tests of illumination, is afforded by ancient light cases. At present the difficulty of deciding whether an applicant has a *bona fide* claim that his illumination is materially affected is very considerable; it is safe to say that in many such cases the photometric measurement of illumination would be a very valuable weapon, and I understand that Mr. P. J. Waldram has recently found his modification of the Trotter photometer very serviceable in this connection.

As regards artificial illumination, it is equally clear that in order to prescribe what is the proper amount of illumination for different purposes, one must have available some means of measuring the illumination provided. For example, in suggesting the desirability of having at least 3 foot-candles as a reading illumination in schools and libraries, the Illuminating Engineering Society was assisted by having at their command a record of measurements in such interiors showing that this standard could actually be attained. In the same way, were it attempted to put forward tentative suggestions regarding the amount of illumination required for different trades and industries, actual measurements would be essential as a means of checking the results obtained.

In passing, one may trace an interesting analogy between the study of ventilation and conditions of air in rooms and illumination. In the case of ventilation and air-supply it was only when precise and simple methods of testing were devised that the importance of the matter could be brought home to the general public; in the same way when one can demonstrate that illumination is a measurable quantity, one has gone far towards impressing the public with the desirability of scientific treatment.

Hygienic Aspects of Factory Lighting.

Something has already been said regarding the importance of illumination in schools and colleges, and libraries. These two subjects recently formed the subject of special discussion at meetings of the Illuminating Engineering Society. In conclusion, a few words may be said about factory lighting and illumination for industrial purposes. This has also been a matter which has recently been brought prominently forward. It formed the subject of special comment in the Report of H.M. Inspector of Factories for 1909, from which a quotation has already been made. The report just issued by the Departmental Committee on Accidents has again made special reference to the subject, inadequate lighting being designated as "a very frequent cause of accident and of grave danger," and a general opinion, on the part of inspectors, employers, and employees being expressed that some further tentative recommendations on the subject were needed.

Public opinion is therefore rapidly becoming educated to the need for greater care in this respect, just as in the case of ventilation and pure air. Moreover, just as in the matter cited above, it may be expected that the statement of a precise standard of illumination for different purposes will be greatly facilitated in the future by better means of measuring illumination. While noting the need for consideration in this matter, the report proceeded: "Even before such a standard can be arrived at, it is recommended that inspectors should be given general statutory powers to require adequate lighting in all places where work is done, and in all places which are a source of danger by reason of artificial insufficient lighting."

A very similar expression of opinion was made at the important Congrès International des Maladies Professionnelles, held in Brussels last year, at which I was present as one of the delegates of the Illuminating Engineering Society. It was again recognised that good illumination is essential in all industrial operations, if only by reason of the strain thrown on operators by attempting to do their work in a poor light. But it was felt to be possibly even more important that dangerous machinery should be illuminated with sufficient intensity, and with properly placed lamps, so as to reduce the danger of accidents to a minimum.

I should like to make it clear that in laying stress on this matter I, for one, do not advocate any immediate stringent regulations at the moment, nor does anything of the kind appear to be foreshadowed in the reports referred to. It is necessary to proceed cautiously in the matter, and all that is desired at the present moment is for an interest to be taken by the authorities and due measures taken to collect the necessary data. It may be anticipated, therefore, that a moderate course, taken in accordance with this spirit, will be welcomed both by the workpeople and the employer. The impression appears to be very general and well-grounded that good illumination is desirable from the standpoint of both parties; employers will only be too glad to receive guidance on these matters, recognising that poor illumination, besides involving risk of accident to employees, leads to spoiled work and prejudicially affects quality and output of work.

Another aspect of the matter which is not without its appeal to employers is the close connection which may be presumed to exist, and which is already becoming recognised by insurance companies, between the number of accidents that occur and the conditions of illumination. Accidents are doubly inconvenient to employers, both on account of the stoppage of work and interference of routine, and because of the heavy compensation to the injured; they are, therefore, the more willing, when this is pointed out, to bear the relatively small expense needed in order to put the lighting in a thoroughly satisfactory condition.

THE British Minister at Panama has forwarded to the Board of Trade a translation of a law passed by the Panama National Assembly providing for public works to be carried out during 1911-12. The total cost is put at about 232,000L., and the works include the construction of public buildings, bridges, roads, wharves, and port improvements, sewer improvements, &c. The works will be given to local contractors in preference to others. Most of the bridges will be of concrete. His Majesty's Minister adds that catalogues and other information sent to him by British manufacturers in regard to the supply of material for any of the improvements will be handed to the contractor who undertakes that special work. The particulars of the works may be seen at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, London, E.C.

THE
Architect and Contract Reporter.

FRIDAY, JUNE 9, 1911.

Published weekly, subscription 19s. per annum for Great Britain, and for Colonial and Foreign subscriptions £1 6s. 6d. All business communications to the Managing Director,

P. A. GILBERT WOOD,

Publishing Offices, 6-11 Imperial Buildings, Ludgate Circus, London, England.

Telephone No. 4725 Holborn.

Branch Offices at 43 OLD QUEEN STREET, S.W., Messrs. W. HAY FIELDING & CO. being the representatives for all business purposes.

The Birmingham Offices are at 102 COLMORE ROW.

** Entered in the United States of America as second-class matter.

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EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit the insertion of lengthy communications.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

** As great disappointment is frequently expressed at the nonappearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

ATHENS.—Sept. 25.—An international competition of plans is invited by the Greek Ministry of the Interior (Public Works) for the erection of a Court of Justice at Athens. The cost of the building must not exceed 160,000l. A first prize of 800l., and a second prize of 320l. will be awarded. The Greek Official Gazette, containing particulars (in Greek and in French) may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

NORTHAMPTON.—July 7.—The Borough Education Committee invite architects practising in the borough or county of Northampton to submit on the 7th July plans for a secondary school for girls, to be erected in St. George's Avenue. A plan of the site and a copy of the instructions containing the terms and conditions of the competition may be obtained from Mr. Stewart Beattie, Secretary, Education Offices, 4 St. Giles's Street, Northampton.

WALES.—June 16.—The Cymmer Co-operative Society, Ltd., invite competitive designs for rebuilding business premises at Cymmer, Port Talbot. Deposit 5s. Premiums of 15l. and 5l. will be awarded to plans first and second in order of merit respectively. The Secretary, Co-operative Society, Cymmer, Port Talbot, Glamorgan.

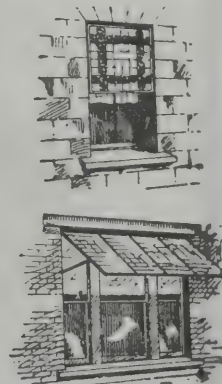
WALES.—July 1.—Competitive designs are invited for chapel, schoolroom, and classrooms to be erected at the junction of St. Alban's Road and Finsbury Terrace, Swansea. Particulars and conditions may be obtained from the Secretary, Mr. D. Walters, 19 Brooklands Terrace, Swansea.

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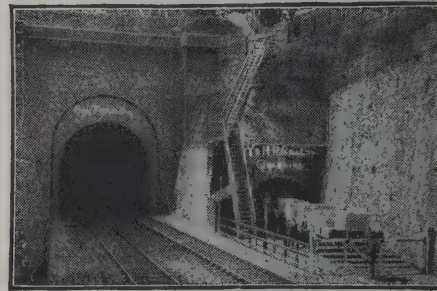
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YEovil.—The Corporation of Yeovil invite competitive designs as follows:—(1) For laying out a site of about 10 acres of land for the purpose of erecting houses for the working class, and (2) for houses to be erected thereon. In respect of each class of design premiums of 20*l.* and 10*l.* will be awarded. Particulars and conditions of site may be obtained upon deposit of 10*s.* 6*d.* from the Town Clerk, Yeovil.

CONTRACTS OPEN.

BARMOOR.—June 19.—For the whole work of erecting a residence at Barmoor, near Morpeth. Send names by June 19 to Mr. L. A. Loades, A.R.I.B.A., architect, Market Place, Morpeth.

BASINGSTOKE.—June 12.—For erection of a new secondary school for 160 girls. Deposit 5*l.* 5*s.* Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

BEXHILL.—July 10.—For the erection of an infants' school. Send names and 2*l.* 2*s.* deposit by June 19 to Mr. B. Lawson, Secretary, Education Offices, Bexhill. (See advertisement.)

BINGLEY.—June 22.—For the following works in connection with alterations and additions to Bingley (Mornington Road) Council school, for the West Riding Education Committee, viz.:—Builder, joiner, slater, plumber, plasterer, and painter. The Education Architect, County Hall, Wakefield. Send 1*l.* deposit to the West Riding Treasurer, County Hall, Wakefield.

BRADFORD.—June 20.—For the mason's, joiner's, lumber's, plasterer's, slater's and painter's work in connection with extensions and additions to the medical officer's residence at the Union Workhouse, Horton Lane. Deposit 1*l.* 6*d.* Mr. Fred Holland, architect to the Board, 22 Manor Row, Bradford.

BURNLEY.—June 10.—For the work of various trades required in the conversion into shops of property in Garden Street. Send names to Mr. G. H. Pickles, M.I.C.E., borough engineer.

BURY.—June 15.—For execution of certain repairs required at Nos. 50, 52, and 54 Stanley Street, and Nos. 2 and 16 inclusive, Barlow Street. The Borough Engineer and Surveyor, Bury, Lancs.

CHELMSFORD.—June 10.—For erection of showrooms and offices, Duke Street, for the Gas Company. Send names and 1*l.* 2*s.* deposit by June 10 to Mr. F. Whitmore, architect and surveyor, 73 Duke Street, Chelmsford.

CHELTENHAM.—June 15.—For erection of a small block for annual instruction purposes at the Naunton Park Council schools. Messrs. Chatters & Smithson, architects, Cheltenham.

CHESTER.—June 19.—For alterations and additions to St. Thomas's Schools, Walpole Street. Rev. H. E. Burder, St. Oswald's Vicarage, Chester.

CHURWELL.—June 14.—For the joiners', plasterers', slaters', and plumbers' work required in the erection of warehouse and rolling rooms at Millshaw Leather Works, Churwell, Yorks. Mr. T. A. Buttery, L.R.I.B.A., architect, Queen Street, Morley, and 1 Basinghall Square, Leeds.

CLECKHEATON.—June 12.—For erection of boundary wall at Norwood Green Mission Church. Messrs. Howorth & Howorth, architects, &c., Old Bank Chambers, Cleckheaton.

COCKERMOUTH.—June 15.—For erection of barn and other buildings and for repairs at Ullock Mains Farm. Ullock Mains Farm (Mr. W. Jackson), and at Cockermonth Castle.

DENHOLME.—June 24.—The West Riding Education Committee invite whole or separate tenders for alterations, &c., Denholme District Council School, viz.: Builder, joiner, lumber, plasterer, and painter. The Education Architect, County Hall, Wakefield. Send 1*l.* deposit to the West Riding Treasurer, County Hall, Wakefield.

DORCHESTER.—June 22.—For building, in brickwork, a bridge over the River Hooke at Lower Kingcombe. Mr. F. T. Galtby, A.M.I.C.E., South Street, Dorchester.

DOVER.—June 21.—For the erection of No. 6 barrack blocks for non-commissioned officers and men at Fort Burghy, Dover, in the Eastern Command. Send names and 1*l.* deposit by June 12 to the Director of Barrack Construction, 80 Pall Mall, London, S.W. (See advertisement.)

EDINBURGH.—June 12.—For carrying out the following works in connection with the erection of Boroughmuir (New) school, Viewforth, for the School Board, viz.: (1) Mason and brick works; (2) carpenter and joiner works; (3) smith and ironfounder works; (4) slater works; (5) plaster work; (6) glazier work; (7) tile work; (8) plumber work; (9)

painter work. Mr. J. A. Carfrae, architect, 3 Queen Street, Edinburgh.

EXMOUTH.—June 24.—For erection of a police station and petty sessions room. Deposit 3*l.* Mr. E. H. Harbottle, county architect, Queen Street, Exeter.

FARNINGHAM.—June 12.—For the execution of summer repairs, &c., required to be carried out at the Council school. Mr. W. G. Burgess, correspondent, Station Road, Swanley Junction, Kent.

GLASGOW.—June 15.—For the excavating work in connection with Glasgow Head P.O. Extension. Deposit 1*l.* 1*s.* H.M. Office of Works, 3 Parliament Square, Edinburgh, or H.M. Office of Works, G.P.O., Glasgow.

GOSPORT (HANTS.).—June 22.—For the reconstruction and enlargement of the Gosport Petty Sessional Court, the erection of magistrates' room and offices, together with certain alterations to the police station. Deposit 2*l.* 2*s.* Mr. W. J. Taylor, county surveyor, The Castle, Winchester, and Gosport Police Station.

GRIMSBY.—June 12.—For the erection and fitting up of bathrooms at the public convenience, Oxford Street. Deposit 2*l.* 2*s.* Mr. H. G. Whyatt, A.M.I.C.E., borough engineer and surveyor, 170 Victoria Street, Grimsby.

GRIMSBY.—June 14.—For alterations to the benches in the chemical laboratory at the Municipal College, Eleanor Street. Mr. D. Chandler, clerk, Education Offices, Grimsby.

GUILDFORD.—June 19.—For certain additions, alterations, paintwork, and repairs to the elementary schools under their administration, for the Town Council. Mr. C. G. Mason, A.M.I.C.E., borough surveyor, Tuns Gate.

HEMSWORTH.—June 24.—The West Riding Education Committee invite whole or separate tenders for the following works in connection with Hemsworth, Kinsley new school, viz.: builder, joiner, slater, plumber, plasterer, painter, ironfounder, and smith. The Education Architect, County Hall, Wakefield. Send 1*l.* deposit to the West Riding Treasurer, County Hall, Wakefield.

HORSHAM.—June 14.—For the erection of a workshop, stores, offices, and new pump-house at the Council's Electricity Works in Stanley Street. Mr. J. B. Morgan, electrical engineer, Council Offices, Horsham.

ILFRACOMBE.—June 12.—For erection of a residence in Tors Park, for Mr. C. E. Dew. Messrs. S. J. Wilde & Son, Weston-super-Mare, and H. W. Weir, Ilfracombe, joint architects.

IRELAND.—June 12.—For building a machine embroidery school at Maghera, County Londonderry, for Messrs. Glendinning, McLeish & Co. Mr. J. St. John Phillips, A.R.I.B.A., architect, 16 Donegall Square South, Belfast. Quantities may be obtained on payment of 1*l.* 1*s.* from Mr. S. C. Hunter, quantity surveyor, 2 Wellington Place, Belfast.

KEIGHLEY.—For new school at Highfield. Mr. A. P. Harrison, M.S.A., 136 Highfield Lane, Keighley, or the Education Offices, Cooke Street.

KENDAL.—For the various works required in pulling down and rebuilding the Bishop Blaize Inn, Highgate, for Messrs. Whitwell, Mark & Co., Ltd. Mr. J. Hutton, M.R.S.I., architect, Kendal.

KNUTSFORD.—For erection of a Conservative club (of ferro-concrete construction). Deposit 1*l.* 1*s.* Apply to Mr. C. R. Longe, Tatton Park Estate Office, near Knutsford.

LEEDS.—June 14.—For the whole or any of the several trades, namely, bricklayer and mason, shopfitter, carpenter and joiner, plumber and glazier, plasterer, or painters' work required in the alteration of shop premises at the junction of Kirkgate and Briggate. Forward names to Messrs. T. Winn & Sons, architects, surveyors and valuers, 84 Albion Street, Leeds.

LEWISHAM.—June 13.—For supplying and erecting the necessary iron and steel work and galvanised iron roofing to cart shed at the Council's Depot, Wearside Road, Lewisham. Charge 5*s.* The Surveyor's Department, Town Hall, Catford, S.E.

LONDON.—June 13.—For supplying and erecting the necessary iron and steel work and galvanised iron roofing to cart shed at the Council's Depot, Wearside Road, Lewisham. Charge 5*s.* The Town Hall, Catford (Surveyor's Department).

LONDON.—June 14.—For repointing work to the chimney shafts at the workhouse, Hoxton, for the Guardians of St. Leonard, Shoreditch. Mr. F. J. Smith, F.R.I.B.A., architect, Parliament Mansions, Victoria Street, S.W.

LONDON.—June 15.—For erection of an electricity sub-station at High Street, Wapping, for the Stepney Borough Council. Deposit 5*l.* note. Mr. W. M. Jameson,

A.M.I.C.E., Municipal Offices, 15 Great Alie Street, White-chapel, E.

LONDON.—June 15.—The Guardians of the Wandsworth Union invite separate tenders for (a) painting works, &c., at St. John's Hill Infirmary; (b) additions to engineers' shop at St. John's Hill Infirmary. Deposit 1*l.* for each set. Mr. F. W. Piper, clerk, St. John's Hill, Wandsworth, S.W.

LONDON.—June 19.—For the erection of buildings at the Electric Lighting Station, Tottenham Lane, Hornsey. Mr. E. J. Lovegrove, borough engineer and surveyor, Municipal Offices, Highgate, N.

LONDON.—June 21.—For the construction of a subway and underground sanitary conveniences at the Broadway, Hammersmith. Mr. H. Mair, borough surveyor, Town Hall, Hammersmith, W.

LONDON.—June 27.—Constructional schemes with tenders are invited for the erection in reinforced concrete of new buildings for His Majesty's Stationery Office and Office of Works Stores in Waterloo Road and Stamford Street, S.E. Any system of construction may be adopted for the whole or part of the work. Deposit 3*l.* 3*s.* Mr. R. J. Allison, A.R.I.B.A., H.M. Office of Works, &c., Storey's Gate, S.W. (See advertisement.)

LYNG.—For the proposed rebuilding of the chancel of Lyng Church, Norfolk. Send names at once to Messrs. Lacey & Upcher, architects and surveyors, 6 Upper King Street, Norwich.

MANSFIELD.—June 14.—For builder's work in connection with alterations and additions for the provision of children's quarters and offices at the Workhouse, Stockwell Gate, for the Guardians. Messrs. Vallance & Westwick, architects, Mansfield.

MINSTER-IN-SHEPPEY.—June 12.—For the reconstruction of offices and connection to sewer at the Council School. Mr. A. Seymour Baskett, correspondent, 46 High Street, Sheerness.

MINSTER-IN-SHEPPEY (KENT).—June 12.—For the execution of summer repairs required to be carried out at the Council school. Mr. A. Seymour Baskett, correspondent, 46 High Street, Sheerness.

MOBBERLEY (CHESHIRE).—June 14.—For the work required in excavating and building a new retaining wall near the Roebuck Inn, Town Lane. Surveyor, Mr. J. McD. McKenzie, Station Buildings, Stamford New Road, Altrincham.

NEWCASTLE-UPON-TYNE.—June 12.—For alterations at Royal Jubilee Council schools, City Road. Send names and 1*l.* 1*s.* deposit by June 12 to the Secretary, Education Offices, Northumberland Road, Newcastle-upon-Tyne.

ROCHDALE.—June 19.—For erection of nurses' home at the workhouse. Mr. H. H. Clough, architect, Butts Avenue, Rochdale.

ROCHFORD (ESSEX).—June 13.—For erection of about 800 ft. run of brick boundary walls, &c., at the workhouse. The Guardians of Rochford Union, the Workhouse, Rochford.

ROTHERHAM.—June 12.—For the whole or any portion of the works required in erection of new workshops, warehouse, stores, offices, and other buildings, at the Phoenix Works. Forward names and address by June 12 to Mr. J. Platts, architect, High Street, Rotherham.

ROTHERHAM.—June 14.—For erection and completion of a small-pox hospital at Kimberworth, comprising administration, laundry, and ward blocks, boundary walls, construction of approach roads, laying out of grounds, &c. Deposit 2*l.* 2*s.* Mr. E. B. Martin, A.M.I.C.E., borough engineer, Town Hall, Rotherham.

SALFORD.—For rebuilding gable, &c., Central Car Depot, Frederick Road, Pendleton. General Manager, 32 Blackfriars Street, Salford.

SALFORD.—June 19.—For supply of vitreous buff terracotta to the Nashville Street school, for the Salford Education Committee. Messrs. Woodhouse, Corbett & Dean, architects, 100 King Street, Manchester.

SALISBURY.—June 12.—For erection of a bath-room, &c., at the residence of the Manager of the Sewage Disposal Works. Mr. W. J. Goodwin, A.M.I.C.E., city engineer and surveyor, Municipal Offices, Salisbury.

SALISBURY.—June 16.—For building an assembly room, class rooms, and lavatories at the Wesleyan Church. Mr. F. Bath, F.R.I.B.A., F.S.I., architect and surveyor, Crown Chambers, Salisbury.

SCOTBY.—For repairs (builders' and slaters'), &c., to cottages at Scotby (near Carlisle). Mr. C. W. Allan Hodgson, The Courts, Carlisle.

SENNEN COVE.—June 30.—For erection of new coast guard buildings at Sennen Cove, near Land's End, Cornwall consisting of houses for an officer and six men. The Superintendent Civil Engineer, H.M. Dockyard, Devonport.

SKIDBY.—June 24.—For the following works, for the East Riding of Yorkshire County Council Small Holdings and Allotments Committee, viz.:—Erection of houses and farm buildings and the formation of roads at the Town End Farm, Skidby. Deposit 1*l.* 1*s.* Mr. H. T. Tate, county land agent, County Hall, Beverley.

SLEAFORD.—June 19.—For removing buildings at present on site and building new cells, charge-room, and sergeant's house to Sleaford police station. Deposit 3*l.* 3*s.* The County Architect (Mr. J. Clare), Sleaford, Lincs.

SOUTHALL.—June 13.—For supplying and fixing entrance gates and wrought-iron unclimbable fencing and other appurtenant works at Southall Park and the Recreation Ground. Mr. Reginald Brown, A.M.I.C.E., F.S.I., &c., engineer and surveyor, Public Offices, Southall, Middlesex.

SOUTHALL.—June 27.—For the construction of an iron and glass covered-way to the entrance to the Public Offices. Mr. R. Brown, A.M.I.C.E., F.S.I., &c., engineer and surveyor, Public Offices, Southall.

SOUTHPORT.—June 14.—For the construction of a carriage shop, offices, footbridge, &c., at Meols Cop. The Engineer's Office, Hunt's Bank, Manchester.

SOYLAND (YORKS.).—June 12.—For the following work at the Soyland, Ripponden Stones Council school, for the West Riding Education Committee, viz.:—(1) Provision of a movable screen; (2) plumber's work, consisting of ventilation and flushing apparatus. The Divisional Clerk, Education Offices, Sowerby Bridge.

STOCKPORT.—June 24.—For the following works in connection with the Dialstone Lane Hospital extension, for the Corporation, viz.:—(1) Buildings, (2) draining and road making. Deposit, contract (1) 3*l.* 3*s.*; contract (2) 2*l.* 2*s.* Mr. J. Jepson, architect, 35 Great Underbank, Stockport.

THORNTON-LE-FEN (Lincs.).—June 22.—For alterations to school at Thornton-le-Fen, for the Lindsey County Council Education Committee. Send 1*l.* 1*s.* deposit by June 12 to the Secretary, 286 High Street, Lincoln.

TIBBSHLEIF.—June 13.—For alterations to Colliery Council schools at Tibbsheif, Derbyshire. Deposit 1*l.* 1*s.* Mr. G. H. Widdows, A.R.I.B.A., architect to the committee, St. Mary's Gate, Derby.

TROWBRIDGE.—June 13.—For carrying out work in alterations and additions at Bromham Council school, Wilts. Deposit 1*l.* 1*s.* Mr. J. G. Powell, county surveyor, Trowbridge.

WALES.—For alterations and additions to the Ffosmain Inn, Nantyglo. Mr. B. J. Francis, architect, Abergavenny.

WALES.—June 12.—For building a new C.M. Chapel at Ferryside, Carmarthen. Mr. D. Lewis, Bristol House, Ferryside.

WALES.—June 12.—For erection of shops at Risca, for the Blaina Industrial and Provident Society, Ltd. Deposit 3*l.* 3*s.* Mr. S. H. Hutchins, architect, Risca, Mon.

WALES.—June 12.—For altering and renovating premises Nos. 11, 13, 15 Newport Road, Cardiff, for the Glamorgan County Territorial Force Association. Mr. J. W. Rodger, architect, 14 High Street, Cardiff.

WALES.—June 13.—For pulling down and re-building the premises of the Tylorstown Conservative Club, East Road, Tylorstown. Mr. W. M. Lewis, L.R.I.B.A., architect and surveyor, Market Street, Pontypridd.

WALES.—June 14.—For alterations to Laleston House, near Bridgend. Deposit 2*l.* 2*s.* Messrs. Cook & Edwards, M.M.S.A., Masonic Buildings, Bridgend.

WALES.—June 16.—For taking down old buildings and erecting a chapel and schoolroom, for the Pysgah Baptist Chapel, Pyle, Bridgend. Messrs. Evans & Jones, architects, High Street, Port Talbot.

WALES.—June 16.—For the enlargement of the mixed and infants' departments of the Dyffryn Council School at Fenn-dale, for the Rhondda Urban District Council. Mr. J. Rees, architect, Hillside Cottage, Pentre. Send 2*l.* 2*s.* deposit to the Accountant, Council Offices, Pentre.

WALES.—June 17.—For re-building Ffosrhydygael, near Aberystwyth. Mr. G. T. Bassett, A.R.I.B.A., architect and surveyor, Aberystwyth.

WALES.—June 19.—For erection of three shops, &c., for Senghenydd and Aber Valley Co-operative Society, Ltd., at Abertridwr. Mr. Griffith D. Griffiths, Secretary.

WALES.—June 21.—For building a church room and cottage attached at Llanafanfawr. The Rev. J. C. Owen, Llanafan Vicarage, Garth, S.O.

WALTHAM.—June 12.—For new organ chamber and extension to vestry at the Parish Church, Waltham, near Grimsby. Mr. H. C. Scaping, architect, Court Chambers, Grimsby.

WOOD GREEN.—June 13.—For the execution of summer repairs at the several schools under their control, for the Wood Green Education Committee. Deposit 1*l.* 1*s.* The Engineer and Surveyor, Town Hall, Wood Green.

WORSBROUGH.—June 10.—For the whole or any portion of the works required in erection of a house on Mount Vernon Road, Worsbrough, Yorks. Mr. A. Whitaker, architect and surveyor, Kingwell Close, Worsbrough Dale, Barnsley.

TENDERS.

BIGGLESWADE.

For the construction of filter beds, drains, roads, fencing, &c., in connection with the sewage disposal works (Contract No. 5). Mr. J. T. EAYES, M.I.C.E., Birmingham.

Firth	£3,824 16 1
Moss & Sons	3,316 12 0
Cousins	3,294 3 8
Lambrick & Co.	3,274 8 7
Buckley	3,227 4 7
Price & Co.	3,226 3 1
Brigg	3,213 8 0
Pickthall	3,133 2 5
Barry	3,076 0 3
WILMOTT, Rushden (accepted)	2,936 18 7

CLACTON-ON-SEA.

For the construction of a sea wall on the West Beach, for the Urban District Council. Mr. D. J. BOWE, surveyor.

Hill & Co.	£7,771 15 2
Cochrane & Sons	7,294 5 10
Pethick Bros.	6,666 0 0
Gradwell & Co.	6,609 4 4
Pedrette	6,495 1 11
Bell & Sons	6,289 0 0
Ford	6,175 0 0
May	6,150 0 0
Wimpey & Co.	6,150 0 0
Inns & Co.	6,120 0 0
Brebner & Co.	5,956 18 1
Gibbons	5,929 19 5
DICKSON, St. Albans (accepted)	5,817 11 9
Exors. of J. Arundel	5,717 14 1

COWBRIDGE.

For ferro-concrete bridge widening.

Lambrick & Co.	£1,013 3 8
Thomas & Co.	982 18 1
Allan	964 2 10
Playfair & Toole	944 5 0
Cowlin & Son	908 0 0
The Yorkshire Hennebique Contracting Co.	885 0 0
Morgan & Co.	864 1 5
Hobrough & Co.	854 5 6
Page	792 19 5
G. L. MORGAN, Pontypridd (accepted)	754 19 5

GREAT YARMOUTH.

For erection of stabling for 50 horses on race course. Mr. J. W. COCKRILL, M.Inst.C.E., Borough Surveyor, Great Yarmouth.

Pestell	£1,589 0 0
Carter & Wright	1,339 0 0
Harman	1,275 0 0
Moore & Son	1,272 0 0
Dastoe	1,167 0 0
Wright	1,149 10 0
BEECH, Great Yarmouth (accepted)	1,149 0 0

HETHERSETT.

For erection of eight cottages in the parish of Hethersett, Norfolk, for the Henstead Rural District Council.

Palmer	£1,930 10 0
Bowden	1,600 0 0
Boddy & Co.	1,543 10 0
Smith	1,507 0 0
Tofts	1,502 0 0
Hurn & Son	1,467 0 0
Dowe	1,450 0 0
Trudgett	1,400 0 0
Podd & Fisher	1,317 0 0
Sparkes & Latten	1,315 0 0
TAYLOR, Cringleford (accepted)	1,280 0 0

KELVEDON.

For erection of institute at Kelvedon, Essex. Mr. J. W. START, F.S.I., architect, Colchester.

Lewis & Sons	£1,886 0 0
Wells & Co.	1,284 0 0
Saunders	1,215 0 0
Theobald	1,195 0 0
Smith & Son	1,193 0 0
Johnson & Hawkes	1,189 0 0
Fryd	1,177 0 0
Deaves	1,176 0 0
Beaumont	1,169 0 0
Chambers	1,137 0 0
Trudgett	1,050 0 0
SPALDING, Sons & Co., Norwich (accepted)	1,050 0 0

LONDON.

For making-up and paving Seymour Road, Southfields, for the Wandsworth Borough Council. Mr. P. DODD, borough engineer.

Wainwright & Co.	£1,430 0 0
Parry & Co.	1,376 0 0
Mears	1,320 0 0
E. & E. Iles	1,316 0 0
Adams	1,296 3 5
Mowlem & Co. (recommended)	1,296 0 0

For removal and reinstatement of street refuges on the routes of the Coronation processions, for the Westminster City Council.

West Division.

Carmichael	£418 0 0
Griffiths & Co.	403 7 6
Mowlem & Co.	361 0 0
Acme Flooring and Paving Co. (1904)	234 10 7
IMPROVED WOOD PAVEMENT Co. (accepted)	148 0 0

East Division.

Carmichael	£1,093 0 0
Griffiths & Co.	1,059 2 6
Mowlem & Co.	954 0 0
Improved Wood Pavement Co.	811 0 0
ACME FLOORING AND PAVING Co. (1904) (accepted)	724 16 0

MAIDSTONE.

For erection of Territorial drill-hall at West Kent Place, Union Street.

West Bros.	£5,238 0 0
Skinner	5,191 0 0
Wallis & Sons	4,993 0 0
Pearce & Sons	4,600 0 0
Corben & Co.	4,560 0 0
Cox	4,427 0 0
Clark & Epps	4,063 0 0
Burrows	4,319 0 0
Elmore & Sons	4,278 0 0
BARDEN & HEAD (accepted)	4,114 0 0

MORLEY.

For erection of a villa in Victoria Road. Mr. T. A. BUTTERY, architect, Morley.

Accepted tenders.

Wain, Headingley, mason	£547 0 0
Lazenby Bros., Leeds, joiner	421 8 0
Hargreaves, Churwell, plumber	189 0 0
Iredale & Son, Birstall, plasterers	263 0 0
Scholey Bros., Leeds, slaters	76 7 0
Hirst, Morley, painter	48 0 0

SKIPTON.

For sewerage and sewage disposal works in connection with the Farnhill and Kildwick sewerage scheme. Messrs. SPINKS, PILLING & RODWELL, engineers, Leeds.

Mitchell	£3,260 0 0
Waring	3,237 0 0
Briggs	3,150 0 0
Taylor	3,106 9 11
Bushley & Sons	2,919 2 0
Sugden	2,830 16 1
Morley & Sons	2,766 3 2
Naylor & Sons	2,699 14 0
Brebner & Co.	2,676 10 6
Balmforth Bros.	2,675 8 11
Edmondson & Wyatt	2,674 0 0
Duckett	2,610 5 0
Arundel	2,591 12 6
Ward & Tetley	2,586 16 5
Sefton	2,552 0 4
Brown	2,548 13 4
A. SCHOFIELD, Leeds (accepted)	2,516 19 9

WALES.

For erection of vestry and Sunday-school at Cwmllynfell Congregational Chapel. Mr. E. D. JONES, architect, Cwmllynfell, Glam.

Stephen	£850	8	0
H. Williams	845	0	0
T. J. WILLIAMS & Co., Rhiwfawr and Cwmllynfell (accepted)	829	12	0
Architect's estimate	820	0	0

For additions and alterations to the Cwmffrwdor branch premises for the Abersychan, British, and Talywain Industrial Co-operative Society, Ltd. Mr. A. G. BABBIDGE, architect and surveyor, Pontypool.

Powell Bros.	£373	0	0
Poulton & Whiting.	320	0	0
Bindon & Williams	297	19	0
Branch	284	0	0
MEARA, Abersychan (accepted)	265	0	0
Evans & Co.	240	0	0
Architect's estimate	219	13	0

For rebuilding Providence Congregational Church, Mountain Ash. Mr. T. W. MILLER, M.S.A., architect, Mountain Ash.

Phillips & Davies	£2,510	0	0
Jones Bros.	2,380	0	0
Morgan & Sons	2,348	18	0
D. Davies & Sons	2,225	0	0
W. DAVIES, Mountain Ash (accepted)	2,225	0	0

For the following works, viz. (1) erection of seventy-four houses at Cwmcelyn, Blaina, Mon., and (2) the necessary roads in connection therewith, for the Nantyglo and Blaina Urban District Council. Mr. W. J. DAVIES, engineer, Blaina.

<i>Houses.</i>			
Dawson & Jones	£16,995	0	0
Tudor	14,990	0	0
BIRCH, Tredegar (accepted)	13,320	0	0
Surveyor's estimate	13,185	0	0

<i>Roads.</i>			
BIRCH (accepted)	663	2	6
Surveyor's estimate	672	10	9

WEMBLEY.

For the making-up of Wembley Park Drive, for the Urban District Council. Mr. C. R. W. CHAPMAN, surveyor.

Chandler	£5,350	13	2
Starkey & Co.	3,335	3	0
Adams	3,263	13	5
Free & Sons	3,191	18	1
Fitzgerald	3,166	8	7
Elliott & Co.	3,140	12	3
Gibbons	3,117	19	7
Thompson	3,082	6	10
Wooster	3,069	9	1
Brummell	2,985	0	11
WILLS & POWIS, Wembley (accepted)	2,894	11	2

WEST HAM.

For street works in Mill Road.

Sangwin, jun.	£1,963	2	3
Adams	1,503	8	9
Parsons & Parsons	1,428	4	3
Griffiths & Co.	1,402	13	9
ANDERSON, Poplar (accepted)	1,400	6	0

THE CRYSTAL PALACE.

LORD TENTERDEN's scheme for the purchase has been before the public for some months, and the interesting details are known to most of our readers, as from time to time we have urged its claims in the columns of this Journal. Under these circumstances the report just issued by the Alexandra Palace Trustees for the past twelve months will be of interest. A profit of nearly 2,000l. made on the year's working, with about 1,600l. spent out of revenue on improvement and furniture is not a bad record, and if this can be done in connection with the Alexandra Palace, much more could be done with the larger and more important undertaking at Sydenham. The life membership should appeal to intending subscribers.

THE Wortley (Sheffield) Rural District Council have decided to build a small-pox hospital costing over 2,000l., at Hallwood, near Grenoside. The building is also designed to serve as a sanatorium for consumptives when there are no cases of small-pox. The site has been leased from the Duke of Norfolk for 200 years.

A CHIMNEY FROM AN EARLY SIXTEENTH CENTURY HOUSE AT MASHAM, YORKSHIRE.

THE illustration shows a particularly fine example of a stone chimney from an old farm-house near the station at Masham, Yorkshire.

It is simple and good in outline, and gives indication of a cosy hearth inside. Directly following the Perpendicular period, its details are of quite a late Gothic tendency. The coping is distinctly Perpendicular in treatment, and is similar to one on the chimney-stack at Bolton Castle, a few miles further up the dale (Wensleydale). The weatherings and tumbling courses are nicely treated with good overhanging throatings.

The chimney is built in rather large courses of local limestone, with wide joints, and the whole is of a delightful grey-brown colour. The slates on the roofs are moor flags.

THE Incorporated Institute of British Decorators are offering a Travelling Studentship of 50l. for the encouragement of decorative painting. A silver medal and 3l. is also offered for the best essay on "The decorative use of colour."

THE new Opera House, at Blackpool, is approaching completion, and Messrs. Waring & Gillow, London, who are furnishing the interior, have done a considerable amount of work. The general contract was carried out from the designs of Messrs. Magnall & Littlewood, of Manchester, by Messrs. J. Parkinson & Sons.

AMONG the inventories of the estates lodged with the Sheriff-Clerk of Lanarkshire at Glasgow is that of Alexander Cullen, F.R.I.B.A., F.R.S.E., J.P., architect in Hamilton, Motherwell, and Glasgow, who resided at Millburn, Dalserf, and 3 Blythswood Square, Glasgow, 16,276l. 2s. 10d.

THE fourth congress of the International Musical Society, held at the University of London, terminated on Saturday last. Sir Alexander C. Mackenzie presided at the general meeting, and mentioned that the membership had grown from 756 in October, 1902, to 1,028 in May, 1911. A resolution was adopted recommending that certain rules be laid down for the use of architects planning church buildings, in order that the space required for the apparatus of church music might always be secured.

MR. F. W. P. RUTTER has purchased the fine example of Mr. Norman Shaw's domestic work known as "Dawpool," Cheshire, with thirty acres of ground. The residence was designed for the late Mr. T. H. Ismay, of the White Star Line.

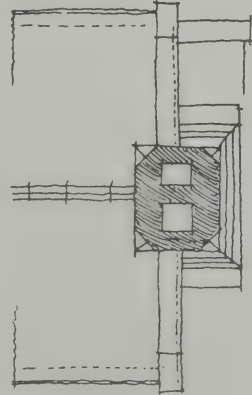
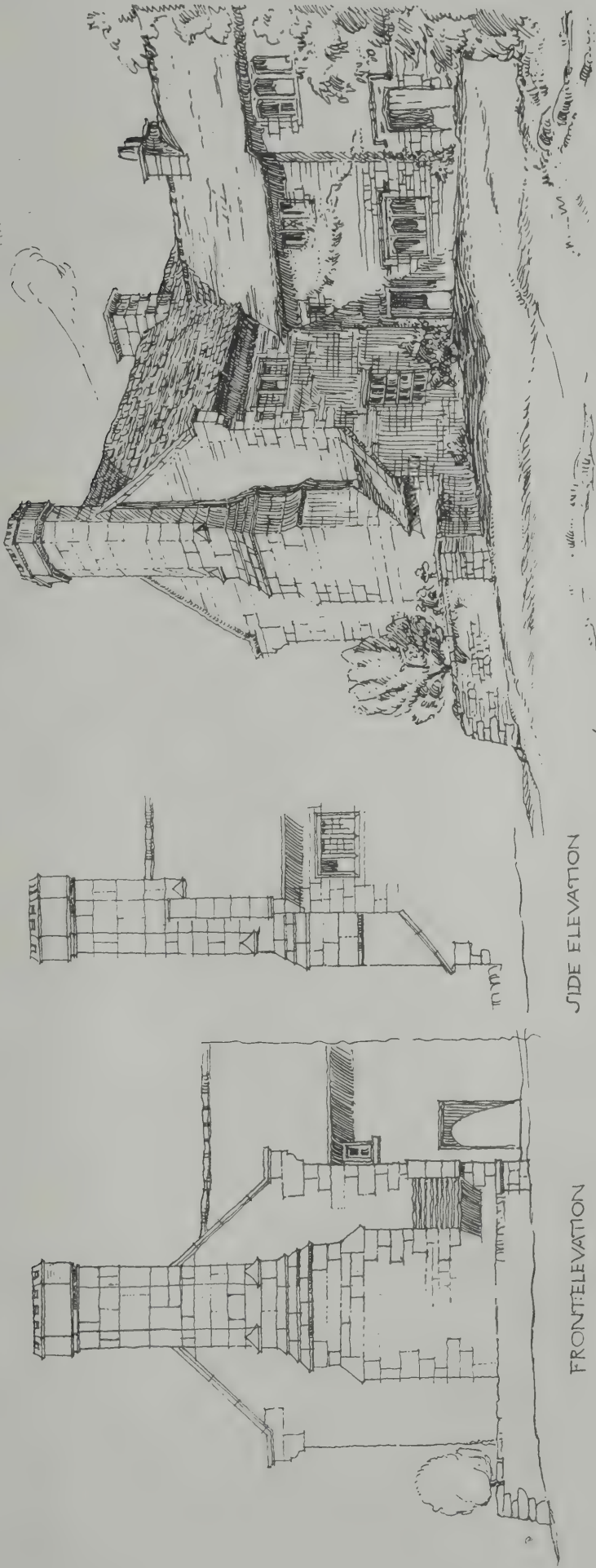
A COMPETITION has been organised for schemes for improving the present appearance of the Central Pier at Blackpool. An essential feature of the project is the erection of a large pavilion on the centre portion. Premiums of 35l. and 15l. are offered, and designs must be sent in by the end of the month.

Two memorial wall-paintings, executed under the direction of Mr. A. O. Collard, F.R.I.B.A., were dedicated last week by the Bishop of London in the church of St. Peter, Hammersmith. The panels are by Mr. H. G. Murray, of Britannia Studio, Sloane Square, W. The one on the north shows "Our Lord's Charge to St. Peter," that on the south "Our Lord's Appearance to St. Mary Magdalene in the Garden."

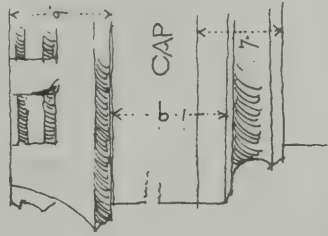
WARRANT was granted to Moss' Empires, Ltd., at Edinburgh Dean of Guild Court last week for the work of reconstruction of the stage of the Edinburgh Empire Palace Theatre. The general structure of the stage will be similar to that of the old one, though light iron work will to some extent replace woodwork. There will be a new fireproof curtain of asbestos, with a water spray attachment instead of a sheet-iron screen as before. The dressing-rooms are to be re-arranged with the necessary exits. Over the stage will be fixed a special contrivance which would act as an exit for smoke in case of fire. Operations will be commenced immediately, and it is hoped to have the work completed by the end of July.

THE Managing Committee of the Heritors of the Parish of Dunfermline had under consideration last week a report from Sir R. Rowand Anderson, L.L.D., on the condition of the external stonework of the walls of the Abbey Church, which in several places are showing signs of decay. In his report the architect stated that the decay of the stone is only superficial, and that the structure is not in any way endangered, and, after detailing the measures that should be taken to arrest the process of decay, he recommended that a portion of the decayed work on the north-east and south sides of the church should be dealt with this summer. The committee adopted his recommendation, and gave the necessary instructions for having same carried out.

A CHIMNEY from an Early 16th Century HOUSE at MASHAM, YORKSHIRE.

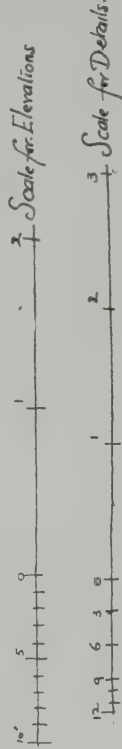


PLAN.



DETAILS

PERSPECTIVE SKETCH



"THE ARCHITECT" STUDENTS' SKETCHING AND MEASURING CLUB.
FROM A DRAWING BY "LE QUAYT."

NEW CATALOGUES.

THE British Thomson-Houston Co., Ltd., have prepared an illustrated 8-page leaflet giving some effective electric illumination devices for the Coronation. Most of them are made to look effective by day no less than by night through the use of flags and drapery. Letters and monograms serve, of course, their loyal purpose equally well whether seen by day or by artificial light. The firm have also issued through their Lamp and Wiring Supplies Department a list of surplus lamps offered at cheap prices.

Messrs. Thomas Skidmore & Son, Wolverhampton, recently sent us a leaflet illustrating a few of the twelve-corner-bent steel safes. Two types of their book safes are shown which are especially adapted to meet the demand for an inexpensive and thoroughly reliable fire-resisting office book safe, and which have never failed to preserve their contents from the ravages of the fiercest flames. The third type shown are the Quality 101 B. safes, which, as well as being guaranteed fire-resisting, are reliable thief-resisting safes for ordinary risk, and are warranted free from damp or any moisture, so that deeds or papers enclosed will not be in any way discoloured or defaced.

It has frequently been remarked that whereas a building owner (and sometimes his architect) is very often almost reckless in his efforts to render the carcase of his property fire-resisting he fails to take any steps at all to protect the windows, forgetting that fire may come from without no less than from within. This short-sighted policy is only equalled by the economy of the shipowner who imperils his vessels to save a bucketful of tar. One means of window protection is the provision of metal shutters. But better still, because it is never caught unprepared, is the use of wired glass. Messrs. Pilkington Bros., Ltd., St. Helens, recall in two leaflets a couple of instances of its effectiveness. Four years back a violent explosion occurred at Woolwich Arsenal, doing severe damage for miles around. Although the Plumstead electricity generating station is less than half a mile away the wired glass held together, and no damage was done to the valuable plant below. A more recent proof of the qualities of Messrs. Pilkington's glass was afforded a few weeks back at their own works when a large straw shed was burnt out, but a warehouse connected with it was unaffected, though the wired glass windows became red hot. This is consistent with the British Fire Prevention Committee's test, which reached 1,660 degrees Fahr. The glass is made in three varieties, wired cast, wired rolled, and wired polished. It is recommended by Messrs. Pilkington for roofs, windows and doors in workshops, mills, factories, car sheds, electric power stations, lift doors, sides of lifts, skylights, verandahs, motor garages, covered ways, &c.

Certainly one of the most interesting possibilities of present-day architecture lies around the use of surface materials like glazed terra-cotta for façades of town buildings. Many examples may already be seen in the streets both of London and the provinces; some of these are very good, some are indifferent, and some decidedly bad. The profession are not yet quite educated in the use of colour, and as a consequence some regrettable mistakes have been committed in the employment of the material. It is, however, obvious that they arise from lack of experience and over boldness in æsthetic experiment. The surest protection against their recurrence is for architects to learn by a careful scrutiny of what has been already carried out, what to do, and what not to do. In view of this (rather obvious) fact, special value attaches to an album issued by the Leeds Fireclay Co., Ltd., illustrating a number of buildings erected with their "Burmantofts Marmo" and "Vitreous" Terra Cotta. "Burmantofts Marmo" is a material having a "matt" surface. It is produced in a variety of colours in addition to white, and an examination of the photographs shows to what diverse buildings it has been successfully applied. It is unaffected by atmospheric conditions, and of great durability. The great advantages of hard fired terra cotta are well known to all architects; it does not disintegrate like many stones, and it has excellent fire-resisting qualities. The album furnishes excellent examples also of the Burmantofts "Vitreous" Terra Cotta, which has a washable surface, is made in many shades, and, like "Marmo," has great weather-resisting qualities. Among the excellent photographs of buildings in which Burmantofts "Marmo" was employed are Atlas Chambers and the Scottish Union Offices, Leeds (Messrs. Perkin & Bulmer, archi-

itects); Post Office House, Leeds (Messrs. G. D. Martin & Sydney D. Kitson, M.A., architects); new premises for the Michelin Tyre Co., Ltd., Chelsea (Mons. F. Espinasse, architect); Messrs. Wright's premises, Middlesbrough (Messrs. Moore & Archibald, architects); Messrs. Thornton & Co.'s premises, Leeds (Mr. Sydney D. Kitson, M.A., architect); and Messrs. Simpson's premises, Doncaster (Mr. F. Norman D. Masters, M.A., architect). The examples of "Vitreous Terra Cotta" include Lancaster House, Princess Street, Manchester (Mr. Harry S. Fairhurst, architect); the Manchester Central Fire Station (Messrs. Woodhouse, Willoughby & Langham, architects); Messrs. Hepworth's premises, Leeds (Mr. Percy Robinson, architect); the new Y.M.C.A. building in Manchester (Messrs. Woodhouse, Corbett & Dean, architects); and business premises in Dale Street, Manchester (Mr. A. Argile, Manchester). In addition to the buildings illustrated, "Burmantofts Marmo" has been used for the construction of the *Daily Telegraph* building at Brighton, Messrs. Joseph & Smithem being the architects; and the new premises for Messrs J. Lyons & Co. in Fleet Street (Messrs. Brown & Barrow, architects). Mention must be made of the building for the Armourers' Company in Copthall Court and Drapers' Gardens (Mr. Alexander Graham, architect), the elevations being entirely carried out in "Burmantofts Marmo," and the booking hall at Cannon Street District Railway Station. The elevations of all the tube stations for the Underground Electric Railway are executed in Burmantofts "Sang de Bœuf" glazed terra cotta.

An unusually compact catalogue has been issued by Messrs. John Gibbs & Son, Duke Street, Liverpool, illustrating a selection of their many mechanical ventilation specialities. They are approved makers of patent air-propelling and ventilating fans, of "Peerless" mechanical heaters, dust collecting and separating plant; blowers and exhaust fans for gas-producing plant, and other contrivances for human comfort and safety. The fans have been designed for use in drying rooms, cotton factories, dye works, printing works, ships, hotels, theatres, assembly rooms, and all places where it is difficult to carry off vitiated air by natural ventilation. Messrs Gibbs & Son are so confident of the all-round superiority of their patent fans that they are willing to send one of the stock size for a fortnight's comparison with those by any other maker. Their patent safety interlocking double pole quick-break regulating switch provides at a low cost a means of controlling the fans with perfect safety, it being impossible to turn on the power without all the resistance being in circuit. Included in the catalogue are numerous illustrations of installations of different kinds carried out by the firm; tables and reports giving cold facts as to their efficiency; and other data interesting to all connected with this great subject.

Mr. Alexander G. Lee, 14 John Street, Bedford Row, W.C., has forwarded to us a small pamphlet dealing with his "All Time" Asphalted Sheet Lead, together with a sample of it. This damp course consists of a continuous single sheet of lead (not a series of foils laid together) between two layers of specially prepared fibrous asphalted sheeting. It is nearly twenty years since Mr. Lee commenced to advocate the damp-resisting qualities of lead as a damp-course; and in the interval the profession generally have become so thoroughly converted that there is no need to go into them here. Four qualities are made by Mr. Lee, viz. A, B, C, and D. All are similar in appearance, the exception being a thicker quality of lead foil in the B, C, and D qualities, and the insertion of oiled paper bands along the edges, facilitating their being pulled apart to form a water-tight lap-joint, when used on large, flat surfaces or for vertical work. "A" quality is stocked ready for delivery in all wall widths, viz. 4½, 9, 14, 18, 22½, 27, 31½, 36, and 39 inches, in rolls 66 feet long without a joint. The other qualities are stocked 39 inches wide by 49 feet long without a joint, but can be had in all widths to special order. "A" quality 4½ in. wide works out at 1¼d. per foot run; "D" quality at 7d. per foot super.

Messrs. Richard Johnson, Clapham & Morris, Manchester, have issued a well got up new catalogue relating to some of the various kinds of wire guards and woven wire which they manufacture. This catalogue is specially got out for the use of works, as it shows the best methods of guarding machinery, &c. A portion of it is also devoted to wirework suitable for lift and window guards, such as might be used by architects. The firm are prepared to submit special designs with quotations upon receipt of a rough sketch giving

measurements of the parts for which the guards are required; and, if desired, send skilled workmen to erect and fix. The range covered in the catalogue is a very wide one, for it includes letter boxes and revolving screens, grilles, and drying-racks.

Messrs. Robert Jenkins & Co., Rotherham, have issued a new list of the "Ivanhoe" patent welded steel sectional boiler. At a recent test with a No. 3 size boiler the number of B.T.U.'s per hour was 702,250 with the damper full open, and the B.T.U.'s per square foot heating surface for the same time was 9,438. These figures are proof of high efficiency. Messrs. Jenkins & Co. vigorously advocate the use of steel boilers as against those of cast iron.

THE STREET OF TO-DAY AND TO-MORROW.*

The Street of Yesterday.

IN considering the street of to-day and to-morrow it might not be amiss to first consider the street of yesterday. Roads there have always been since prehistoric times, for man as a nomadic animal always desired to reach from one point to another as readily as possible. First, the beating of a track through the primeval forest, or over the moor, was possibly the first suggestion of what is now the modern street. Continuous traffic, the carrying of heavy loads, &c., incited the idea of a permanent highway, first composed of rough logs or stone, and then developing into a thought-out formation. The old civilisations of India, Egypt, Greece and Italy had their fine main-roads over vast stretches of country, and the Romans have left a legacy behind them as the greatest of road-makers of the ancient world. To carry their roads the most direct route, they not only overcame great engineering difficulties by piercing mountains and throwing bold arches over rivers, but on a scientific basis they laid the foundation of the art of road-making. Roads came before cities, and not until the few congregated houses had developed into the city, by long stages and through many eras, did the street as we know it arise. In the cities of ancient and mediæval times the street plan was rarely treated with artistic regard, large outlook, or firm grasp, except perhaps in the instance of Piræus, which, as the seaport of Athens, was laid out by Athenian engineers. Blind, tortuous, and narrow streets were the rule in them, relieved now and then by splendid temple or palace and noble squares. It has remained for modern times with great traffic and building considerations to grapple with, to insist on street reforms. A sense of the civic responsibility has been aroused by the unseemly conditions prevailing, and out of this the passing of the Town Planning Act of 1909 in our own country may be considered as the forerunner of further legislation to secure to the municipality and the State the right of control in matters which have previously either been left to chance or else allowed to fall into the hands of those whose sole interest is land and property exploitation.

The streets of our already-built towns and cities exist, and any quarrel with their widths, beginnings, terminations, or general lay-out can at present only be remedied by expensive and cumbersome methods. In the suburbs and parts yet unbuilt, it is to be hoped that the scientific principles of modern town-planning will prevail. In both cases, the street must be viewed, first, from the point of traffic consideration; secondly, building considerations; and thirdly, aesthetic considerations.

Traffic Considerations.

Paving.—The first consideration—viz., traffic—precipitates us into questions of paving as primary factors. Good and suitable paving is essential to the ideal street. The standard type of old, the cobble-stone, has happily passed away, or, at any rate, where it does exist it may be generally taken that its retention is mainly affected. From that we have passed on to many developments in road making, varying widely according to districts, traffic, &c. Economic and hygienic considerations come most into play, and however largely traffic may develop in the future—possibly entirely of the nature of motors and self-propelled vehicles—these must remain as essentials.

A committee of the borough councils of London, reporting this last March, showed that the streets of London are paved with thirteen different kinds of material. Most of these are laid on a foundation of concrete, and include: (1) Jarrah and karri wood from Australia; (2) deal and fir from Norway; (3) beech, larch, and red gum from California; (4)

rock asphalt from Eastern France and Northern Italy; (5) basalt lava from Germany; (6) tarred slag-macadam from British ironworks; (7) lithophalt blocks and flints, &c.

London has over 2,000 miles of streets, and all manner of varieties of stone, wood, asphalt, &c.—even indiarubber—have been and are used. We have travelled very far since the days of the old macadam paving, and the only portions of that now left in the City are a small portion of the Victoria Embankment and the Guildhall yard. It has been stated that London streets have cost over 3,000,000*l.* to make them as they are to-day, and every year over 400,000*l.* is spent in keeping them in repair. There is therefore some degree of truth in the legend that the streets of London are "paved with gold."

The general consensus of opinion is that the motor traffic is injurious to macadamised roads, but that it does not materially affect the surface of asphalted streets. And this leads one to the opinion that asphalt is the road material of the future. It is general in the great capitals of the Continent, and in America, since first being laid in Washington, in 1878, it has never looked back in the States. It is not to be asserted that asphalt is always preferable. Not only may a better pavement be yet discovered, but there are places where wood, granite, brick, or macadam may be chosen over asphalt without a moment's hesitation. The point is that good paving is a *sine qua non* of the ideal street, and it is foolish to talk of good planning, vistas, street adornments, &c., if the street itself is badly or poorly paved.

Repairs and Cleansing.—Next to the paving surface the great essential of the good street is its repair and cleanliness. All the considerations of traffic hinge upon these three fundamentals. The constant dislocations of traffic in our English streets consequent upon the constant sewerage, gas, water, electric light, &c., operations, as well as the repair necessary from use, are one of the great problems which beset the municipal engineer. Beyond the contemporary carrying out, as far as possible, of this work, little can be done except by the construction of special subways for all pipes and cables in main thoroughfares, which is now done in very many instances. The immense benefits of a regular subway system in our cities are evident when one thinks that by this means it would be possible to introduce into buildings installations for vacuum cleaning, pneumatic letter-delivery, and very many various electrical and mechanical contrivances.

The expeditious and economical cleansing of our thoroughfares is one to which much thought has been given in recent years. Originally each resident swept his portion of the street, that portion which lay in front of his premises, and up to 1853 this was actually the custom in Paris—the *beau-ideal* of all cities. This system has now been superseded except in the case of snow-clearing on footpaths, and the uniform municipal service has been found more popular and efficient, quite apart from the impracticability of the old primitive method in our present-day civilisation. As a man is so often judged by the condition of his linen, a city may be equally judged by the cleanliness of its streets.

Traffic Problems.—These two brief references to paving and street cleansing lead up to the primary considerations of the street as a traffic artery. This is a subject which has come to the front enormously in recent years, owing largely to the great increase of self-propelled vehicles. At the end of 1910 there were no less than 218,680 vehicles of this description registered for use in the United Kingdom. Their introduction has been revolutionary, and, besides the effect they produce on the road surface, their effect on traffic conditions is one warranting deep inquiry. The chaos in the streets caused by fast motor-traffic and slow horse-traffic is only likely to remedy itself by the elimination of horse vehicles altogether. At first it might be done by insisting upon the transmission through main thoroughfares of the horse vehicles at the least busy hours of the day. The movement towards the better regulation of goods traffic is a step in the right direction, and should lead to the abolition of such a state of affairs as now exists on the south-east side of Piccadilly Circus. Too much praise cannot be given to the admirable supervision of the traffic by the police, but it is evident that two classes of vehicles, one driven fast and the other slow, and permission being allowed for the former to overtake the latter, will be sufficient to block—as it does—any crowded thoroughfare. Coupled with this we find all kinds of vans and carts being loaded and unloaded even at times of the maximum flow of traffic. This is a condition of affairs which also prevents the traffic from cross-streets either being allowed to cross over a main thoroughfare or to join the main stream, and incidentally blocks the pedestrian traffic on the footpath. This is a time of transition in the method of locomotion, and with greater organisation the problem will

* A paper read before the Institution of Municipal Engineers, London, May 31, by Mr. Guy Wilfrid Hayler, M.Inst.Mun.E., M.R.San.I.

likely be solved. A system of recognised stopping-places for omnibuses, together with the abolition of all obstacles in the street area likely to impede traffic, would be welcome reforms.

(To be continued.)

VARIETIES.

THE Gillingham Town Council have adopted a plan submitted by Mr. J. J. Robson for a new pier at Commodore Hard 800 feet in length, and estimated to cost 8,645*l*.

THE Guildford Town Council have decided to erect twenty workmen's cottages in place of the fifty recommended by the Housing Committee.

THE tender, amounting to 44,334*l*., of Messrs. G. E. Wallis & Sons, Ltd., Maidstone, for the erection of County Offices at Maidstone, has been accepted by the County Council in place of the lowest tender which was at first accepted.

THE Wolverhampton Borough Education Committee are going to apply for a loan of 915*l*., the cost of the site of a proposed school in Whitmore Reans, for 400 mixed scholars and 300 infants.

MR. W. H. MOON, in consequence of the dissolution of partnership between Mr. John Abbot and himself, has opened an office at 4 Parliament Street, Hull, where he will continue to practice as an architect and surveyor.

MR. TEMPLE MOORE, architect, has been instructed to prepare plans of a new pulpit and reading desk for the Abbey Church at Hexham, and also the filling with painted panels of two bays in the choir triforia. The woodwork throughout will be by Messrs. Holloway Bros., London.

TRADE NOTES.

A LARGE clock has just been erected in the parish church of Elland, Yorkshire, which shows time on four 7 feet illuminated dials, strikes the hours and chimes the Westminster quarters. It has been erected by Messrs. John Smith & Sons, of Derby, generally to the designs of the late Lord Grimthorpe, and the makers guarantee it to maintain perfectly accurate time. They made a similar clock for Huddersfield parish church a little time since, also one for Sowerby Church in the same neighbourhood.

AMONG the recent contracts of Messrs. E. H. Shorland & Brother, Ltd., of Failsworth, Manchester, are the following:—The new Secondary Schools, Peterborough, are being ventilated by means of Shorland's patent Exhaust Roof and Special Inlet Ventilators; the New Infirmary, Cardiff, is being supplied with Shorland's double-fronted patent Manchester Stoves with descending smoke flues and patent Manchester Grates; the Plashet Schools, Upton Park, London, and the Teviothead Schools, N.B., have been supplied with their patent Warm-Air Manchester Stoves.

An exhibition has just been held at Winchester House, Old Broad Street, under the title of "The City of London Business Exhibition." The principal exhibitors were Roneo, Ltd., of 26 Holborn Viaduct, E.C., who were showing a wide range of office requirements, which included samples of their steel cabinets; the drawers are also made of steel, and the rollers are on ball bearings. The result is perfectly satisfactory, the drawers opening and shutting with absolute ease. They are clean, and are, of course, proof against rats and mice. An important point is that, being constructed of steel, there is no shrinkage, and they are almost dust-proof in consequence. Several novelties were shown by other firms, a machine for punching a cheque for the prevention of forgery, several adding machines, and a stamp-affixing and checking machine.

An extraordinary general meeting of Joseph Robinson & Co., Carlisle, has been called for June 9 to consider the expediency of effecting an amalgamation between that company and John Howe & Co. and the Long Meg Plaster Company, the new company to be called the Carlisle Plaster and Cement Company, and to take over the various concerns as from January 1 last. The capital of the new company, including Debentures, will be 127,320*l*., consisting of 60,000 Ordinary and 10,000 Five per Cent. Preference shares of 1*l*. each, 50,000 Four and a-Half per Cent. First Debenture stock, 3,000*l*. Five per Cent. First Second Debentures, and 4,320*l*. Five per Cent. Second Debentures. The whole of the assets of the three firms, with the exception of stocks in hand, book debts, and cash balances, will be taken over on the following terms:—Joseph Robinson & Co., Ltd., will receive 60,500*l*.; John Howe & Co., Ltd., will receive 40,000*l*.; and the Long Meg Plaster Company will receive 8,532*l*. Nominees of the three undertakings will subscribe for the remaining shares and Debentures in cash.



PICTUREDROME, KENSINGTON, LIVERPOOL.
Messrs. CAMPBELL & FAIRHURST, architects, Southport. Messrs. J. B. JOHNSON & Co., contractors, Liverpool.



PICTUREDROME, SANKEY STREET, WARRINGTON.
Messrs. CAMPBELL & FAIRHURST, architects, Southport. Messrs. J. B. JOHNSON & Co., contractors, Liverpool.

WE illustrate herewith the front elevations of two recently-opened picturedromes as examples of a surface treatment which has proved particularly suitable for this class of work. In both cases the exterior was coated with "Zingessol"—the perfected water paint—as soon as the plasterers had left the job. "Zingessol" was also used with success for the interiors. This paint is, of course, manufactured by Orr's Zinc White, Ltd., at Widnes, Lancs. The work was carried out by Messrs. J. B. Johnson & Co., slaters, plasterers, and concretors, 108 Crown Street, Liverpool.

THE Plymouth Corporation Works Committee have approved plans and estimates submitted by the borough surveyor for the reconstruction of subsidiary sewers and repaving of streets in district No. 11, and comprising an area of 42 acres. The estimated cost of the work was 11,552*l*.

THE Ayr Dean of Guild Court have passed plans for the reconstruction of the Academy School at an estimated cost of 12,500*l*. at their fortnightly meeting on June 2. The architect is Mr. Jas. A. Morris, F.R.I.B.A., Wellington Chambers, Ayr.

THE
Architect and Contract Reporter.

FRIDAY, JUNE 16, 1911.

Published weekly, subscription 19s. per annum for Great Britain, and for Colonial and Foreign subscriptions £1 6s. 6d. All business communications to the Managing Director,

P. A. GILBERT WOOD,

Publishing Offices, 6-11 Imperial Buildings, Ludgate Circus, London, England.

Telephone No. 4725 Holborn.

Branch Offices at 43 OLD QUEEN STREET, S.W., Messrs. W. HAY FIELDING & CO. being the representatives for all business purposes.

The Birmingham Offices are at 102 COLMORE ROW.

** Entered in the United States of America as second-class matter.

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Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

Special Position Spaces.—Unless ordered for weekly insertions the Proprietors cannot guarantee particular dates.

EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit the insertion of lengthy communications.

We have upon our staff a very eminent Barrister, who will be glad to answer in the columns of this paper any legal question that may be of interest to our readers. All letters must be addressed "Legal Adviser," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

TENDERS, ETC.

** As great disappointment is frequently expressed at the nonappearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

ATHENS.—Sept. 25.—An international competition of plans is invited by the Greek Ministry of the Interior (Public Works) for the erection of a Court of Justice at Athens. The cost of the building must not exceed 160,000l. A first prize of 800l., and a second prize of 320l. will be awarded. The Greek Official Gazette, containing particulars (in Greek and in French) may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

LOWESTOFT.—July 31.—The education committee invite designs for an elementary school at Roman Hill for 500 boys. Premiums of 20, 10, and 5 guineas. Send application for particulars and 10s. 6d. deposit by June 24 to Mr. R. Beattie Nicholson, Town Clerk, Town Hall, Lowestoft.

NORTHAMPTON.—July 7.—The Borough Education Committee invite architects practising in the borough or county of Northampton to submit on the 7th July plans for a secondary school for girls, to be erected in St. George's Avenue. A plan of the site and a copy of the instructions containing the terms and conditions of the competition may be obtained from Mr. Stewart Beattie, Secretary, Education Offices, 4 St. Giles's Street, Northampton.

WALES.—July 1.—Competitive designs are invited for chapel, schoolroom, and classrooms to be erected at the junction of St. Alban's Road and Finsbury Terrace, Swansea. Particulars and conditions may be obtained from the Secretary, Mr. D. Walters, 19 Brooklands Terrace, Swansea.

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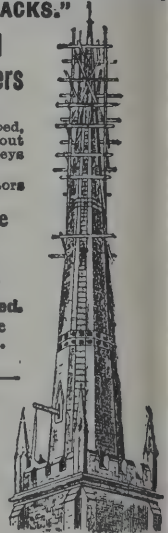
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YEovil.—The Corporation of Yeovil invite competitive designs as follows:—(1) For laying out a site of about 10 acres of land for the purpose of erecting houses for the working class, and (2) for houses to be erected thereon. In respect of each class of design premiums of 20*l.* and 10*l.* will be awarded. Particulars and conditions of site may be obtained upon deposit of 10*s.* 6*d.* from the Town Clerk, Yeovil.

CONTRACTS OPEN.

ASPATRIA.—June 24.—For the filling-up, concreting, and laying with wood blocks the main floor of the public hall. Mr. C. Bouch, secretary, Aspatria Public Hall Co., Ltd., Market Place, Aspatria, Cumberland.

BARMOOR.—June 19.—For the whole work of erecting a residence at Barmoor, near Morpeth. Send names by June 19 to Mr. L. A. Loades, A.R.I.B.A., architect, Market Place, Morpeth.

BARNACRE.—June 22.—For erection of a vicarage at Barnacre, near Garstang (Lancs.). Messrs. Austin & Paley, architects, Lancaster.

BEXHILL.—July 10.—For erection of an infants' school (Mr. H. P. Burke-Downing, F.R.I.B.A., architect, 12 Little College Street, Westminster Abbey, S.W.). Send names and 2*l.* 2*s.* deposit by June 19 to Mr. A. B. Lawson, secretary, Town Hall, Bexhill.

BINGLEY.—June 22.—For the following works in connection with alterations and additions to Bingley (Mornington Road) Council school, for the West Riding Education Committee, viz.:—Builder, joiner, slater, plumber, plasterer, and painter. The Education Architect, County Hall, Wakefield. Send 1*l.* deposit to the West Riding Treasurer, County Hall, Wakefield.

BOLDON COLLIERY.—June 23.—For the alteration of the Colliery Inn, Boldon Colliery, Durham. Mr. B. S. W. Gilbertson, architect and surveyor, 73 Four Lane Ends, Hetton-le-Hole.

BRADFORD.—June 20.—For the mason's, joiner's, plumber's, plasterer's, slater's and painter's work in connection with extensions and additions to the medical officer's residence at the Union Workhouse, Horton Lane. Deposit 10*s.* 6*d.* Mr. Fred Holland, architect to the Board, 22 Manor Row, Bradford.

CANNOCK.—June 21.—For work to be done and materials supplied in connection with alterations and additions to the cottage homes, New Penkridge Road. Mr. H. M. Whitehead, engineer's office, Penkridge, Staffs.

CHESTER.—June 19.—For alterations and additions to St. Thomas's Schools, Walpole Street. Rev. H. E. Burder, St. Oswald's Vicarage, Chester.

DALTON.—June 24.—The West Riding Education Committee invite whole or separate tenders for the following works, in connection with the Dalton new school, viz.:—Builder, joiner, slater, plumber, plasterer, painter, ironfounder, and smith. The Education Architect, County Hall, Wakefield, or the divisional clerk, Woodhouse, Sheffield. Send 1*l.* deposit to the West Riding Treasurer, County Hall, Wakefield.

DENHOLME.—June 24.—The West Riding Education Committee invite whole or separate tenders for alterations, &c., to Denholme District Council School, viz.: Builder, joiner, plumber, plasterer, and painter. The Education Architect, County Hall, Wakefield. Send 1*l.* deposit to the West Riding Treasurer, County Hall, Wakefield.

DORCHESTER.—June 22.—For building, in brickwork, a bridge over the River Hooke at Lower Kingcombe. Mr. F. T. Maltby, A.M.I.C.E., South Street, Dorchester.

DOWRAN.—June 24.—For erection of a farmhouse at Dowran, in the parish of St. Just-in-Penwith. Mr. James Thomas, the Farmhouse, Dowran, Cornwall.

DUNDALK.—June 21.—For erection and completion of a pair of houses in Mount Avenue, Dundalk Demesne, for Messrs. M'Alister. Deposit 10*s.* 6*d.* Mr. J. F. M'Gahon, architect, 9 Exchange Buildings, Dundalk.

EDINBURGH.—June 20.—For the mason, joiner, plaster, plumber, and slater work in connection with erection of two cottages at Torduff reservoir, near Colinton, for the Edinburgh and District Water Trustees. Works Department, 12 St. Giles Street, Edinburgh.

EXETER.—June 20.—For alterations and additions at the workhouse. Mr. R. M. Challice, architect, 14 Bedford Circus, Exeter.

EXETER.—June 24.—For certain work at the cattle market, Bonhay Road, consisting of concrete paving and the re-

arranging of the penning, for the Town Council. Mr. T. Moulding, city engineer and surveyor, 7 Southernhay West, Exeter.

EXMOUTH.—June 24.—For erection of a police station and petty sessions room. Deposit 3*l.* Mr. E. H. Harbottle, county architect, Queen Street, Exeter.

GATESHEAD.—July 17.—For erection and completion of the superstructure of the proposed new lunatic asylum on the West Duddo Estate, near Stannington and Morpeth. Messrs. George T. Hine & H. Carter Pegg, architects, 35 Parliament Street, Westminster. Send names and 5*l.* deposit by June 21 to Messrs. Allen & Partners, of Grainger Street West, Newcastle-on-Tyne.

GOSPORT (HANTS.).—June 22.—For the reconstruction and enlargement of the Gosport Petty Sessional Court, the erection of magistrates' room and offices, together with certain alterations to the police station. Deposit 2*l.* 2*s.* Mr. W. J. Taylor, county surveyor, The Castle, Winchester, and Gosport Police Station.

GUILDFORD.—June 19.—For certain additions, alterations, paintwork, and repairs to the elementary schools under their administration, for the Town Council. Mr. C. G. Mason, A.M.I.C.E., borough surveyor, Tuns Gate.

HEMSWORTH.—June 24.—The West Riding Education Committee invite whole or separate tenders for the following works in connection with Hemsworth, Kinsley new school, viz.: builder, joiner, slater, plumber, plasterer, painter, ironfounder, and smith. The Education Architect, County Hall, Wakefield. Send 1*l.* deposit to the West Riding Treasurer, County Hall, Wakefield.

IRELAND.—June 19.—For building a new chancel, &c., to the parish church of Knocknamuckley, near Lurgan (Mr. W. J. Fennell, F.R.I.B.A., architect, 2 Wellington Place, Belfast). Messrs. M'Carthy & Brookes, surveyors, Scottish Provident Buildings, Belfast.

IRELAND.—June 21.—For building fifty-two cottages, &c., for the Kinsale Rural District Council. Mr. J. Murphy, clerk, the Office of the Rural District Council, Kinsale.

IRELAND.—June 21.—For improvements and additions to First Ray Manse. Mr. M'Intyre, architect, Letterkenny.

IRELAND.—June 23.—For the erection of a shop and dwelling-house in Ratcliffe Street, Sligo. Messrs. Chute & Fowler, civil engineers, Sligo.

LEEDS.—For the separate trades required in the erection of a small warehouse in Bull and Bell Yard, Briggate. Send names forthwith to Mosley's, estate agents, 6 Wormald Row, Leeds.

LEEDS.—June 20.—For various branches of work in connection with the heating of block 4 at the workhouse, lavatory accommodation section 6 of the Union infirmary, heating of corridors Union infirmary, and out-houses for dirty linen, Union infirmary. Mr. J. H. Ford, clerk, Poor Law Offices, South Parade, Leeds.

LEWISHAM.—June 27.—For constructing a lavatory and making the necessary alterations in forming additional office accommodation at the Town Hall, Catford. Charge 5*s.* Surveyor's Department, Town Hall, Catford, S.E.

LONDON.—June 19.—For the erection of buildings at the Electric Lighting Station, Tottenham Lane, Hornsey. Mr. E. J. Lovegrove, borough engineer and surveyor, Municipal Offices, Highgate, N.

LONDON.—June 21.—For the construction of a subway and underground sanitary conveniences at the Broadway, Hammersmith. Mr. H. Mair, borough surveyor, Town Hall, Hammersmith, W.

LONDON.—June 27.—Constructional schemes with tenders are invited for the erection in reinforced concrete of new buildings for His Majesty's Stationery Office and Office of Works Stores in Waterloo Road and Stamford Street, S.E. Any system of construction may be adopted for the whole or part of the work. Deposit 3*l.* 3*s.* Mr. R. J. Allison, A.R.I.B.A., H.M. Office of Works, &c., Storey's Gate, S.W.

MASHAM.—June 27.—For erection of a Wesleyan Chapel at Breary Banks, near Masham. Mr. T. Trotter, Masham, Yorks.

MOSELEY.—June 19.—For the conversion of fourteen privies into water-closets at Greenhill Avenue, School Road, including the necessary drainage work. Mr. A. W. Cross, A.M.I.C.E., 23 and 25 Valentine Road, King's Heath.

NORFOLK.—June 24.—For erection of six cottages in the Parish of Horning and six cottages in the Parish of Happisburgh, for the Smallburgh Rural District Council. Deposit 1*l.* 1*s.* Mr. Fairfax Davies, clerk, North Walsham.

NORTH ORMESBY.—June 28.—For the proposed alterations and improvements at North Ormesby, Derwent Street

Council Schools, for the North Riding of Yorkshire County Council Education Committee. Mr. J. C. Wrigley, secretary, education offices, County Hall, Northallerton.

NOTTINGHAM.—June 26.—For alteration and adaptation of the Residence, Edwards Lane, for the accommodation of children, for the Guardians. Deposit 2*l.* 2*s.* Mr. W. B. Starr, architect, 12 Victoria Street, Nottingham.

OVINGDEAN.—For building the first portion of the St. Mary's Home, Ovingdean, Sussex. Mr. F. T. Cawthorn, architect, 170 North Street, Brighton.

PORTSMOUTH.—June 20.—For the erection, completion, and maintenance for six months of a public convenience near the Hulsea Arches, London Road. Send 2*l.* 2*s.* deposit to Mr. G. H. Etherton, town clerk, Town Hall, Portsmouth.

PUDSEY.—June 20.—For the whole or any portion of the work required in erection of Masonic Hall, Church Lane. Forward applications by June 20 to Messrs. Jowett, Kerdal & Sons, architects, Pudsey.

ROCHDALE.—June 19.—For erection of nurses' home at the workhouse. Mr. H. H. Clough, architect, Butts Avenue, Rochdale.

ST. DAY.—June 30.—For building a schoolroom, for the Trustees of the Primitive Methodist Church. Mr. John Eva, Trefula Farm, St. Day, Cornwall.

SAFFRON WALDEN.—June 19.—For erection complete of a five-stall public lavatory and one water-closet on a site by the cattle market, Hill Street. The Borough Surveyor's office, Saffron Walden.

SALFORD.—June 19.—For supply of vitreous buff terracotta to the Nashville Street school, for the Salford Education Committee. Messrs. Woodhouse, Corbett & Dean, architects, 100 King Street, Manchester.

SCOTLAND.—June 19.—For erection of a greenhouse within the grounds of the Aberdeen Poorhouse. Mr. C. B. Williams, inspector of poor, 20 Union Terrace, Aberdeen.

SCOTLAND.—June 27.—For the erection and completion of a church and vestries, together with the enlarging of the present school hall, for the Deacons' Court of New Cumnock United Free Church. Deposit 1*l.* 1*s.* Mr. W. Beddoe Rees, architect, 3 Dumfries Place, Cardiff.

SEDBERGH.—June 22.—For erection and completion of three shops and houses in Main Street. Mr. S. Shaw, F.R.I.B.A., architect, Kendal.

SENNEN COVE.—June 30.—For erection of new coast-guard buildings at Sennen Cove, near Land's End, Cornwall, consisting of houses for an officer and six men. The Superintending Civil Engineer, H.M. Dockyard, Devonport.

SHREWTON (WILTS.).—For new pitch pine floors to be laid in the schoolroom and classroom. Mr. G. L. W. Blount, architect and surveyor, 39 High Street, Salisbury.

SKIDBY.—June 24.—For the following works, for the East Riding of Yorkshire County Council Small Holdings and Allotments Committee, viz.:—Erection of houses and farm buildings and the formation of roads at the Town End Farm, Skidby. Deposit 1*l.* 1*s.* Mr. H. T. Tate, county land agent, County Hall, Beverley.

SLEAFORD.—June 19.—For removing buildings at present on site and building new cells, charge-room, and sergeant's house to Sleaford police station. Deposit 3*l.* 3*s.* The County Architect (Mr. J. Clare), Sleaford, Lincs.

SOUTHALL.—June 27.—For the construction of an iron and glass covered-way to the entrance to the Public Offices. Mr. R. Brown, A.M.I.C.E., F.S.I., &c., engineer and surveyor, Public Offices, Southall.

SOUTH SHIELDS.—June 19.—For erection of a four-stall public urinal in the West Park, abutting Stanhope Road. Mr. L. Roseveare, A.M.I.C.E., borough engineer, Municipal Buildings, South Shields.

STOCKPORT.—June 24.—For the following works in connection with the Dialstone Lane Hospital extension, for the Corporation, viz.:—(1) Buildings, (2) draining and road making. Deposit, contract (1) 3*l.* 3*s.*; contract (2) 2*l.* 2*s.* Mr. J. Jepson, architect, 35 Great Underbank, Stockport.

STOKE-UPON-TRENT.—June 17.—For erection of new infant school and enlargement of existing buildings at Goldenhill Council Schools, for the Education Committee. Send names and 2*l.* 2*s.* deposit by June 17 to Messrs. A. R. Wood & Son, architects, Town Hall, Tunstall.

STOPSLEY.—July 3.—For erection of a Council school at Stopsley, Bedfordshire. Send names and 1*l.* 1*s.* deposit by June 19 to Messrs. Gotch & Saunders, architects, Kettering.

WALES.—June 19.—For erection of three shops, &c., for Senghenydd and Aber Valley Co-operative Society, Ltd., at Abertridwr. Mr. Griffith D. Griffiths, Secretary.

WALES.—June 19.—For sundry alterations at the Marlborough Road and Splotlands Council Schools, for the Education Committee, Cardiff. The city engineer's office, City Hall, Cardiff.

WALES.—June 19.—For proposed workmen's institute and hall, Cwmfelinfach. Send in names and 3*l.* 3*s.* deposit by June 19 to Mr. R. L. Roberts, M.S.A., Abercarn.

WALES.—June 19.—For erection of a new infant school at Wood Road, Pontypridd, for the accommodation of 400 children. Send 2*l.* to Mr. D. Milton Jones, secretary, Education Offices, Municipal Buildings, Pontypridd.

WALES.—June 20.—For erection of twenty-four houses at Holly Bush, Mon., for the Ancient Druid Workmen's Building Club. Mr. R. Simmonds, architect and surveyor, Blackwood and Holly Bush.

WALES.—June 20.—For erection of forty-five houses, including roads and sewer, at Cæmarydwn, Merthyr Tydfil, for the Court Workmen's Cottage Club. Mr. R. Morris, architect, Idrisville, Merthyr.

WALES.—June 20.—For erecting a vestry to Bethania Chapel, Aberfan. Mr. T. E. Rees, architect, Merthyr Tydfil.

WALES.—June 21.—For building a church room and cottage attached at Llanafanfawr. The Rev. J. C. Owen, Llanafan Vicarage, Garth, S.O.

WALES.—June 21.—For erection of twenty-seven houses at Cæmarydwn, Merthyr Tydfil, for the Summerhill Building Club. Mr. R. Morris, architect, Idrisville, Merthyr Tydfil.

WALES.—June 22.—For erection of twenty semi-detached villas at Gellifaelog, Penydarren, Merthyr. Mr. J. Mann, jun., architect, 27 Lancaster Villas, Merthyr Tydfil.

WALES.—June 24.—For building a bowling alley and making internal alterations to club house, the Garw Liberal Club, 40 Victoria Street, Pontycymmer, Garw Valley. Mr. J. Williams, secretary.

WALES.—June 24.—For proposed fire station, &c., Aberbargoed, for the Bedwellty Urban District Council. Deposit 1*l.* 1*s.* Mr. J. H. Lewis, A.M.I.C.E., Blackwood (Mon.).

WALES.—June 26.—For a pair of semi-detached villas at Aberbargoed, for Messrs. Fisher & Williams. Mr. D. Williams, Duffryn Stores, Aberbargoed.

WALTHAMSTOW.—June 26.—For the supply, delivery and erection of the steelwork, &c., required for the construction of a steel turbine gallery at the Generating Station, Exeter Road, Hoe Street. Deposit 1*l.* 1*s.* Mr. G. W. Holmes, A.M.I.C.E., engineer to the Council, Town Hall Annexe, Walthamstow.

WILMINGTON.—July 8.—For erection of a Council school to accommodate 180 children at Wilmington, Birchwood Corner, Kent. Send in applications, accompanied by a deposit of 1*l.*, by June 21, to Mr. F. W. Crook, secretary, Caxton House, Westminster, S.W.

WOKINGHAM.—June 28.—For the construction of public conveniences adjoining the Market Place; also for the construction of a concrete retaining wall faced with stone; also for kerbing, channelling, and concrete slab paving, &c., in Denmark Street and Market Place. Deposit 1*l.* Mr. C. W. Marks, borough surveyor, Town Hall, Wokingham.

YORK.—June 20.—For the restoration of the nave roof of St. Cuthbert's Church. Mr. John Howard, F.A.I., 3 New Street, York.

TRADE NOTES.

THE Brilliant Sign Co. (1907), Ltd., inform us that they have executed nearly the whole of the day and night signs for the Festival of Empire, Crystal Palace. They have one in hand for the National Gas Engine Co. measuring 50 feet long by 3 feet 6 inches deep—one of the largest day and night signs in existence. It will be fixed on the top of the power house, so as to be readable all over the grounds. The Brilliant Sign Co. have also large contracts in hand for illuminated signs for the Great Northern Railway, the Great Western Railway, the Great Central Railway, the Metropolitan and District Railways. In fact, their illuminated sign department has grown to such an extent that in the extension of the factory now in progress they are arranging for this department to be increased for another thirty hands.

THE British Improved Construction Co., 47 Victoria Street, W., have acquired a site on the south side of Inverkeithing Bay, N.B., for extensive works for the manufacture of concrete piping and reinforced concrete. The company, who will employ at least 300 men, intend to make Inverkeithing their headquarters for Scotland.

TENDERS.**BELMONT (HERTS).**

For the erection of a new house at Belmont (Herts). Mr. ERNEST G. DAVIES, architect, Hereford.	
Taylor	£505 0 0
Hiles	496 0 0
Bolt	460 0 0
Williams	445 0 0
PREECE, Hereford (accepted)	424 10 0

BIGGLESWADE.

For alterations and additions to the infirmary at the work-house. Mr. W. JACKSON, architect, Biggleswade.	
Woodward	£3,911 17 6
Fitch & Cox	3,565 0 0
Willmott & Sons	3,392 12 0
Bailey & Co.	2,984 0 0
Drever	2,964 10 0
Trudgett	2,900 0 0
Wright	2,900 0 0
Kidman Bros.	2,799 8 2
REDHOUSE & SON, Stotfold (accepted)	2,709 0 0

CANTERBURY.

For extending cottage homes, Canterbury. Mr. F. D. DORE, architect, Canterbury.	
Dadds	£1,725 0 0
Mount	1,699 0 0
Martin	1,695 11 0
Clarke & Epps	1,695 0 0
Gentry	1,690 0 0
Browning	1,639 0 0
Bowles	1,632 0 0
Seager	1,629 0 0
Harris Bros.	1,624 0 0
Edwards	1,602 5 6
LEWIS & SON, Dover (accepted)	1,526 0 0

DAWLISH.

For alterations to the London Hotel. Mr. R. A. CHURCHWARD, architect, 353 Strand, London, W.C.

Estimate A.

Brock	£2,200 0 0
Friend	1,998 0 0
Hayman & Sons	1,886 0 0
Crocker	1,884 10 0
Pollard & Co.	1,873 0 0
Wilkins & Sons	1,834 0 0
Lamacraft & Son	1,759 0 0
Pittard & Son	1,745 0 0
Slocombe	1,737 10 0
SPILLER & SON, Taunton (accepted)	1,695 0 0

Estimate B.

H. J. SPILLER & SON (accepted)	36 0 0
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HEREFORD.

For erection of Holy Trinity Vicarage. Messrs. NICHOLSON & HARTREE, architects, Hereford.

Jones	£2,400 0 0
Bolt	1,700 0 0
Powell	1,684 0 0
Beavan & Hodges	1,674 0 0
Bowers & Co.	1,666 0 0
Lewis & Co.	1,630 0 0
Cooke	1,594 0 0
PEAKE, Hereford (accepted)	1,555 17 2

IRELAND.

For rebuilding premises in Wellington Street, Ballymena. Messrs. PATTERSON & GRAHAME, architects, Ballymena.

Hogg & Sons	£4,394 0 0
Gault Bros.	2,684 17 4
Dowling	2,410 0 0
McIntyre Bros.	2,400 0 0
O'Hara	2,110 0 0
CARSON, Ballymena (accepted)	2,055 0 0

For erection of a hall, for the Irish National Foresters, Warrenpoint. Mr. P. J. NEARY, architect, Newry.

Neary & Sons	£310 0 0
Butler	305 10 0
Carvill	290 0 0
J. WILSON & SON, Warrenpoint (accepted)	278 0 0

LEEK.

For concrete work at generating station, Leek. Mr. W. E. BEACHAM, engineer.	
Heath & Son	£294 19 9
Mitchell & Son	278 16 0
GRACE, Leek (accepted)	262 5 0
Sanders & Torrance	237 7 10
Salt	234 0 0
Surveyor's estimate	280 0 0

MACCLESFIELD.

For alterations at the General Infirmary.	
Lawton	£1,125 0 0
Roylance & Co.	1,070 0 0
Clayton	1,052 0 0
Gorton & Wilson	1,090 0 0
COOKE, Macclesfield (accepted)	988 0 0

ORCOP.

For the erection of a vicarage house at Orcop, near Hereford. Mr. ERNEST G. DAVIES, architect, Hereford.

Cooke	£1,192 0 0
Walby	1,120 0 0
Court	950 0 0
Bolt	933 0 0
Pugh	900 0 0
W. & R. VIRGO, Pontilras (accepted)	876 0 0

ST. WEONARDS.

For the erection of a cottage at St. Weonards, Hereford. Mr. ERNEST G. DAVIES, architect, Hereford and Monmouth.

Edwards & Son	£250 0 0
T. & F. Moore	249 16 0
Peake	245 0 0
Wilks & Son	225 0 0
Rowberry	197 10 0
Price	195 0 0
Hiles	173 17 0
PREECE, Hereford (accepted)	165 10 0

For alterations and additions to cottage at St. Weonards, Hereford. Mr. ERNEST G. DAVIES, architect, Hereford.

Preece	£149 0 0
G. COURT, Lyston (accepted)	121 0 0

WALES.

For erection of a residence in Fields Park Avenue, Newport. Messrs. A. SWASH, F.R.I.B.A., & SON, architects, Newport, Mon.

King & Co.	£1,376 0 0
Edwards	1,299 0 0
Thomas & Sons	1,295 0 0
Partridge	1,292 0 0
Kirby & Westacott	1,245 0 0
Saunders	1,236 0 0
Morris & Biddle	1,230 0 0
Herbert & Co.	1,200 0 0
Williams	1,190 0 0
Reed	1,185 0 0
Shopland	1,169 0 0
LEADBETER, Newport (accepted)	1,138 0 0

For the erection of a cottage residence and motor house near the Golf Links, Tenby, for Rev. R. H. Wilmot. Mr. J. PREECE JAMES, architect, Tenby.

Adams & Parcell	£778 0 0
Davis & Morgan	626 0 0
Thomas	584 6 6
Phillips	575 0 0
BEYNON BROS. (accepted)	499 4 0

For new shop front, &c., at High Street, Narberth, for Mr. A. W. Tooting, M.P.S., chemist. Mr. J. PREECE JAMES, architect, Tenby.

Griffiths	£196 0 0
Williams	194 0 0
DAVIES & MORGAN (accepted)	178 0 0
Parry	130 0 0

For additions and alterations to the Wesleyan Chapel, Moreton, for the Trustees. Mr. J. PREECE JAMES, architect, Tenby.

Griffiths	£350 0 0
THOS. POOLE (accepted)	346 0 0

For the erection of two dwelling-houses at Whitland, for Mr. William Thomas. Mr. J. PREECE JAMES, architect, Tenby.

ELIAS PARRY (accepted)	£475 0 0
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For alterations and additions to Bank House, Narberth, for Mr. John Lloyd Bushell. Mr. J. PREECE JAMES, architect, Tenby.

THOMAS GRIFFITHS (accepted)	£200 0 0
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INTERIOR FROM HOUSE AT GIDEA PARK.—Messrs. FORBES & TATE, Architects.

AN ARTISTIC CORONATION GIFT.

THE authorities of the School of Art Woodcarving, South Kensington, were happily inspired when they decided to present to Their Majesties a cabinet or Armoire on the occasion of their Coronation.

The Armoire (which was sent this week to Buckingham Palace) was designed by the headmaster and carved by the students of the school.

The wood used is French walnut, and the design is carried out on the lines of the Transitional Gothic of the "Francois Premier" period. The details are modern, but treated somewhat severely in accordance with the style.

The cabinet stands 4 feet 6 inches high and is 2 feet 9 inches wide, the upper portion forming a cupboard with an opening of 2 feet by 1 foot 4½ inches by 1 foot 7½ inches high.

Beneath the centre of the cupboard is a drawer 8 inches by 5 inches by 15 inches deep. The Royal monogram is introduced in the carved panel on the front.

The door, which forms the centre panel, is richly carved with the Royal Arms, the rose, the thistle, and the shamrock. On either side and at the sides of the cupboard are six panels ornamented with the linenfold pattern, with a very delicate line of carving down the centre of each.

The three front panels are separated by small columns richly tooled and finished off with finials and pendants.

The cupboard rests on three arches and bands of pierced tracery. These arches are supported by small shafts with caps and bases. They are octagonal in section and covered with delicately-tooled ornament.

The whole is surmounted by a cornice consisting of a convex moulding pierced and carved with roses and foliage and a frieze on which is carved an inscribed garter. At the two angles are winged cherubs' heads carved out of the angle posts.

THE LIVERPOOL STREET EXTENSION OF THE CENTRAL LONDON RAILWAY.

THE Society of Engineers held their second vacation visit of the present session on June 8, when the works in progress in connection with the extension of the Central London Railway from the Bank Station to Liverpool Street were inspected. The work of driving the tunnels is being carried out from a shaft in Bishopsgate, near Acorn Street, and will be continued up to the junction with the Company's existing sidings at the Bank.

The small running tunnels are 12 feet 5 inches internal diameter, each ring being 20 inches wide with 4-inch flanges, and are made up of four radial-jointed cast-iron segments, two top segments, and a key whose sides taper slightly in the reverse direction to the keystone of an arch; this admits of ease in erection. The joints between the flanges of adjacent rings and segments are formed of creosoted wood

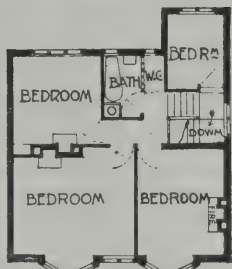
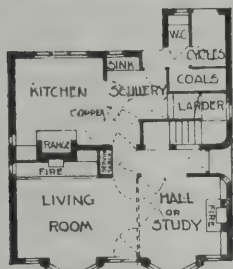
packings, and are bolted together in such a way that the horizontal joints of one ring break joint with its neighbours. The weight of each ring is 33.4 cwt. Under ordinary conditions nine rings or five lineal yards of tunnel are built every twenty-four hours. The shield by which these tunnels are driven consists of a cast-iron or steel cutting edge, followed by a skin of ¾-inch steel plates, butt jointed, which are kept to the cylindrical form by means of suitable strengthened segments and girders, well bolted and riveted together. Forward movement is obtained by means of 7-inch diameter hydraulic rams, eight in number, disposed round the inside of the skin and arranged so that the tongues press against the iron lining already built. These rams are controlled individually or collectively by a set of valves, so that by a suitable combination the direction of the shield may be guided. The maximum pressure available is 2,000 lb. per square inch, which gives a total maximum push of 275 tons.

In the case of the 21 feet 2½ inch internal diameter station tunnel, the shield is on the same principle as that just described, the method of procedure in construction being the same. There are twenty-two rams of 7½ inch diameter, each capable of exerting a total force of forty tons as a maximum, and in place of hand erection of the cast-iron segments hydraulic erectors are used. The rings of this tunnel are 18 inches wide, with 6½ inch flanges, and consist of ten radial segments, two top segments, and a key. The horizontal joints are machined true to radius, but the vertical joints are made with creosoted wood packings. The weight of each ring is 4½ tons, and the anticipated progress is about five rings or 2½ lineal yards per day of twenty-four hours.

The plant at the site of the working shaft consists of two three-ton cranes for dealing with materials to and from the tunnels, and the following compressors for supplying compressed air to the tunnels and for operating the pneumatic-hydraulic pumps and grouting pans:—One vertical compressor with one cylinder 19 inch diameter, 8-inch stroke, and three Reavels compressors each having eight cylinders, 12 inch diameter and 6-inch stroke. One of these latter works against a pressure of 15 lb. per square inch, the other two are two-stage machines, and work against a pressure of 60 lb. per square inch. There is also a compressor by Ingersoll, measuring 18 inches by 18½ inches, and an hydraulic intensifier converting a pressure of 750 lb. per square inch to one of one ton per square inch.

The contractors for the work are Messrs. John Mowlem & Co., and the engineers to the Central London Railway Co. are Messrs. Mott & Hay, of Westminster, for whom Mr. H. J. Deane acts as resident engineer.

MR. CHARLES WILLIAM JUDSON, of Ripon, left 2,500l. to his trustees for the purchase of a site and for the erection of almshouses.

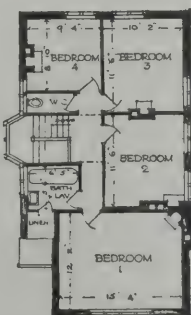
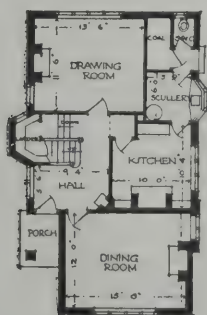


GROUND FLOOR PLAN

FIRST FLOOR PLAN

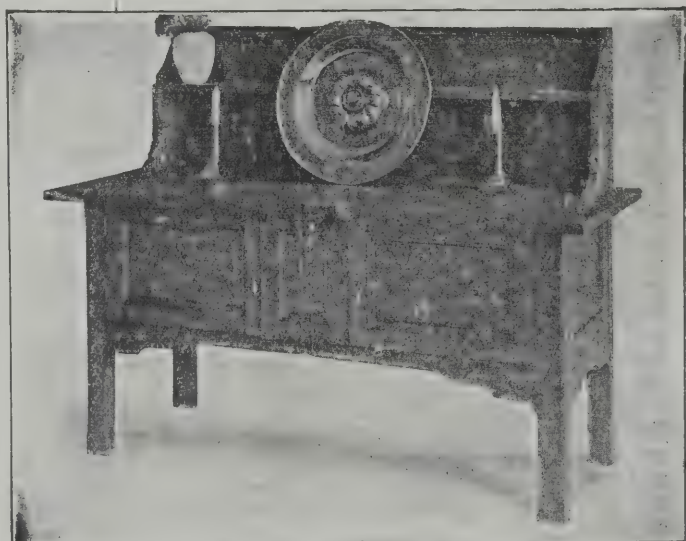
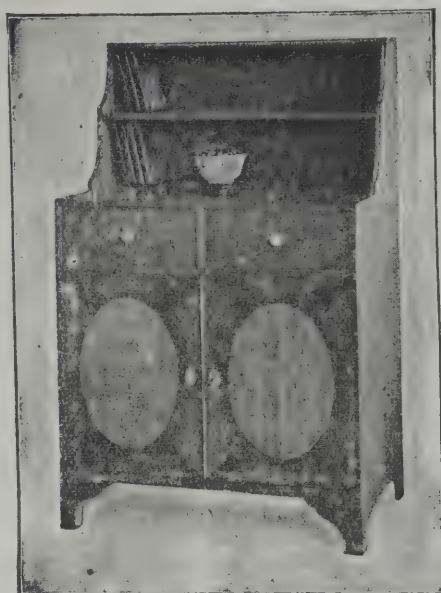
£500 HOUSE AT GIDEA PARK.

Messrs. BARRY PARKER & RAYMOND UNWIN, Architects.



£500 HOUSE AT GIDEA PARK.

Messrs. BAMFORD & AITKEN, Architects.



FURNITURE AT GIDEA PARK IN HOUSE ERECTED FROM DESIGNS OF MESSRS. FAIR & MYER.

Made by Messrs. HINDLEY & WILKINSON.

THE STREET OF TO-DAY AND TO-MORROW.

(Continued from last week.)

ONE of the most important developments in considering the street of to-day seems to have sprung up within comparatively recent years. This is the idea that the street is a fitting place for the erection of all the various useful accessories of our modern life. Of course, it is mainly due to the difficulty of finding any other handy place. But it is not easy to see how we can expect good traffic facilities in our streets when we continue to allow them to be the dumping-ground of all sorts of posts, poles, pillars, kiosks, refuges, boxes, &c.. For instance, in narrow thoroughfares it would surely be better to dispense with massive electric-light standards and connect the cables by suspension wires to rosettes on the houses. This is frequently done with success in the case of electric tramways in narrow streets, an example being Dale Street, Liverpool. Local authorities have not power to regulate the erection of telegraph and telephone poles by the authority of the Postmaster-General, and this leads to their being put up very often in main roads, when subsidiary streets would have done equally as well. Poles of all descriptions, fire-alarms, ambulance sheds, ladders, fire-escapes, &c., should be grouped together, either in a wide, open space, or else provision should be made for them in special buildings. Hydrants, street-orderly boxes, and sand boxes might easily be sunk below the roadway, inside the street area. The elimination of these various obstacles to traffic from the main thoroughfares of London would greatly assist in solving traffic difficulties.

At the present time we find it absolutely necessary to have refuges for foot-passengers in the centre of the streets. It is argued that they separate the two streams of traffic. This is probably true, but they do not facilitate easy locomotion. If underground difficulties in the shape of pipes and sewers render a subway under the road impracticable, they must, of course, be tolerated, but it would surely be better to dispense with them wherever possible, because to be of much service they are obliged to be of a good size. Where they are unavoidable, they are better if designed as islands, rather than as a long strip, thus allowing of cross-traffic to and from streets on the opposite side of the roads. If they have a good high kerb above the street, and are guarded by iron posts, they will be perfect places of safety, but some, in London, are raised scarcely any height above the road surface, others not at all, many being also unguarded by posts. The filth of the streets in wet weather, the danger of vehicles mounting the kerb, &c., render them more like places of danger than safety. The creation of underground conveniences entered from the centre of busy streets also seems indefensible. They are necessarily costly constructions, and to use them one has to run the unnecessary risk of being knocked down by a vehicle, and on emerging into the busy street again the danger is still greater. The convenience in Fleet Street at the Law Courts is an instance. No country has taken up the construction of the underground convenience so widely as England; others have worked upon different lines. Germany has gone in for a system of chalets, often very picturesquely designed, a remarkably good one being in the Ludwigskirche Platz in Charlottenburg. These provide conveniences for both sexes, and might be usefully copied in London. A still further development would be to a wider municipal service, giving facilities for baths, &c., and answering the requirements of an inquiry office, &c. This is, of course, by the way, but the question of the underground convenience and the curtailment of the street area which it causes is certainly a factor in the traffic problem. The street of the future will undoubtedly be one which offers throughout its traffic area—both vehicular and pedestrian—the least obstacle to those using it.

Lighting.—The question of street lighting cannot be ignored here. From the individual lantern to the public and permanent illumination by oil, gas, then electricity and incandescent gas-burners, the record is one of progress throughout. There is still, however, scope for much more to be done. The traffic of our streets by night makes good lighting imperative. In driving motor vehicles, every nerve is strained, and the optic nerve is probably at the highest tension. The streets of London show all kinds and methods of lighting. Many streets are in semi-darkness, others have glaring lamps and the intervening space seems abnormally dark. A common basis of lighting the streets will undoubtedly be the keynote of the future. The improvement in Westminster lighting is commendable, but we still have the spectacle of Edgware Road lighted on the Paddington side by gas and on

the Marylebone side by electricity. There is no doubt London streets could be much better and more economically lighted by more co-operation among the authorities concerned; and as good lighting is profitable to tradesmen, the value of property in the present dingy streets would appreciate enormously, with a general benefit all round. It might be recalled that when the question of better lighting the Unter den Linden in Berlin arose some years ago the choice lay between improved gas and expensive electricity. The authorities decided on electricity because the street was a popular promenade. It is this view, that the street is not merely an avenue of communication, but, in leading thoroughfares at least, something of a "Rotten Row" to the great masses of the population, that should lead one to regard all that concerns it as having an æsthetic side as well as a purely utilitarian one.

Building Considerations.

Architecture.—The next consideration, street building, is perhaps wider in scope than the first, and has all the vexed questions of architecture, by-laws, and building legislation encompassing it. First of all might be mentioned uniformity of design in the architecture of our streets. However much we may be entranced by the glorious medley of our picturesque old English towns, it would be idle to imagine that they can be taken as a model for present-day civic conditions. We are not laying out new cities, like the Americans, and in our building works we must make the transition from the old to the new weave as happily as we can.

In the aspect of any city its architecture is always its dominating feature, and gives the character of its citizens by the houses they live in and the buildings they erect for either their work or their pleasure. In our modern cities we see the vast commercial spirit of the times reflected in its buildings—huge manufactories on the one hand and great areas of mean streets on the other. The solution of many great problems lies with them. The municipality can give the impetus by the erection of noble civic buildings, and repeat history as in Florence, when the Duomo, the Palace of the Signoria, and the great churches of Santa Croce and Santa Maria Novella sprung into being almost in the same year, and that proud and ambitious city awakened its citizens to new life and aspirations.

The tendency of the time towards garden suburbs is decidedly good, but the progress towards making the business quarters of the city mere "canyons" of high buildings is not very inviting. The tall building may be the symbol of commercial daring, as one writer put it, but considerations of air, light, fire, &c., give them more than an individual importance. In America, there being no restrictions to ancient lights, skyscrapers have attained extraordinary dimensions, but it is interesting to know that even there the governing authorities have set limits of upward expansion, varying in different parts of the city, according to the widths of the streets and the nature of the district. This has already been done in Washington, Boston, and recently in Chicago.

It seems absolutely illogical to allow great business houses, factories, workshops, &c., to crowd together on narrow streets, because, not being dwelling-places, they are not required to have the air-space the by-laws stipulate in these cases. While continuity in the frontage line of the thoroughfare should be allowed, there should be provision made for air-space in the front and rear of such premises in proportion to the height.

Professor Beresford Pite, speaking on street architecture, summed up the situation very pointedly by saying: "A whole-hearted acceptance of the doctrine of a frank modernism of design and construction in business premises by architects is sufficient requirement to make of them for the establishment and growth in our midst of healthy street-architecture, expressing the movement of the age in its requirements, and reflecting the intellectual attitude of trained and artistic minds applied to a commercial problem in building. The profitless and stupid antipathy that is supposed to exist between commercial requirements and artistic character should thus, at all events in architecture, cease to be professed, and, having reformed the attitude of art to business life, we can the more sincerely and successfully hope and attempt the resuscitation—for it once existed in pure and noble beauty—of living art in the commercial world."

Frontage Lines.—Coming more into detail with the building considerations of the street, one of the most important points is the question of frontage lines, which in so many of our streets have been permitted to entirely spoil its aspect. There is much to be said for the rigid restrictions which are enforced in this regard on the Continent. There may be individual hardship in some cases, but it has ensured the creation and maintenance of great and noble thoroughfares.

As we have passed the stage when four plain walls and a roof passed for a building, let us hope we are on the way to an era when the erection or alteration of a building will be impossible without strict harmony with its neighbours and its general surroundings. A particularly objectionable proceeding which is frequently observed is the setting back of buildings in the centre of a block and the bringing forward of the two end-buildings. Even if gardens are provided, the street line is spoiled, and is later on still further "uglified" by shops brought forward to the boundary line. Granting the very great importance of light and air in our streets, it should be possible to insist on greater regard being paid to the frontage line of the street without sacrificing these.

Building Legislation.—Very many of the problems of street building have been created by by-laws of an insufficient character and allowing buildings to be judged too much on their merits. There are, of course, local conditions existing everywhere, but they can be too local, and they have led to much abuse and general detriment of the locality in many cases. At the same time, by-laws should be so compiled that the unfairness of enforcing restrictions which might properly apply for crowded property would be avoided in the case of estates laid out on modern lines with houses erected at four to twelve in the acre. The monotony of the streets of our great industrial towns has been to a great extent due to the by-laws being interpreted in this way in the past. It is the crowded property which produces the slum, and if relaxed by-laws are allowed in garden suburbs a rigid insistence on the maintenance of open space should be upheld, as it is so soon found that all sorts of erections make their appearance on this class of property. A great deal has been said for a consolidating Public Health Act, and it would undoubtedly be a great gain to have building by-laws, regulations, and Acts put upon a similar footing, and revised periodically, especially in view of the rapid progress made by the modern methods of construction since they have come into vogue. This would at once set up a civic standard of building and make the street of to-morrow a much better place than the street of to-day. For building legislation is different from much other legislation, inasmuch as it can prevent violation as well as punish the offender.

Aesthetic Considerations.

Art in the Street.—The last consideration of the street from an æsthetic standpoint is one which deserves more attention than it usually obtains. We are proud to consider ourselves a practical people, and, unfortunately, ideas of beauty are not bound up with this. Anglo-Saxons are too prone to consider Art as a luxury, but it can be shown that "to clothe in an artistic form that which civilisation has made useful in the public life" is in the end financially profitable.

But, apart from that, as the ideal street requires to be well planned and well constructed, it is the last human touch, that of harmony and beauty, which will give it character—as essential in the material make-up as in the individual. The example of the beautiful Continental cities is continually alluded to, and, while their main principles may be possible of adaptation, it must not be overlooked that we can only evolve on our own lines. Other countries with other customs mean other ideas. The Latin peoples view the street as their larger home. Climate makes this possible with them, but for only a small fraction of the year would it be possible with us. A writer has said of the Parisian: "He comes downstairs to the street; he descends to his thoroughfare as the millionaire expects to descend to his breakfast-room or his study. Whatever the gloom of the house, his street, catering to his need of colour, variety, beauty and movement, helps him to feel good." If we view the city as Aristotle viewed it—a place "where men live a common life for a noble end"—we cannot but agree that the city can well afford to yield to so innocent and joyous a need.

Trees.—In any consideration of the æsthetic needs of the street, the natural beauty of trees, flowers, and grass must come first. The place of the tree in the street is only slowly being conceded in England. At present it is carried out in a most haphazard fashion, seemingly on the principle that any vacant space calls for a tree. This is surely a wrong way to proceed, as the fine air of spaciousness is constantly marred by uncalled-for clusters of trees, and while wide open space may be spoiled in this way, the planting of trees in thoroughfares of a less width than 80 ft. is, again, likely to be unsuccessful. But much depends on a regular system in street tree-planting, and due consideration being given to the main points which arise, consideration of individual merits of the case. Paris has over 100,000 street trees, and spends

over 12,000*l.* annually on their care and cultivation. But Paris has wide streets and boulevards, whereas our English towns have generally narrow streets, where if the light was obscured by trees it would be extremely prejudicial. But we have very many thoroughfares which would well admit of tree planting, even business thoroughfares, and in London we may well look forward to realising in the not distant future the "green girdle," at least round the Metropolis, so eloquently advocated by Mr. D. B. Niven. The trees planted in Paris are principally plane trees, sycamores, and chestnuts, while acacia has been introduced and thrives splendidly. The choice of trees is a matter of serious consideration, as so many of the existing specimens in our streets, struggling bravely on amidst countless disadvantages, lead the man in the street to regard the subject as a costly fad. Plane and poplar trees planted in the North of England have been failures, while successful in London, but it needs the advice of an expert in these matters.

(To be concluded.)

VARIETIES.

THE Walthamstow District Council are considering the desirability of purchasing a site for the proposed new Town Hall.

THE Llangollen County Schools are to be enlarged by the addition of a new technical school at a cost of 4,000*l.* The plans have been prepared by the county architect.

THE Middlesbrough Education Committee have accepted the tender of Messrs. R. Blackett & Son, of Darlington, for the erection of the Archibald Schools, at a cost of 14,275*l.*

THE Plymouth Borough Council this week adopted a scheme for the reconstruction of subsidiary sewers and the repaving of streets in the Hoe district at an estimated cost of 11,552*l.*

THE Chesterfield Town Council are in negotiation with the Home Brewery Company with a view to the purchase by the latter of 1,000 square yards of Corporation land near the Cattle Market as the site for an hotel.

THE York Education Committee have resolved to invite competitive plans for the proposed elementary school for the Bishopthorpe Road district. The selected site in Campleshon Lane has received the approval of the Board of Education.

MR. J. C. BOYD, engineer, Carlisle, has been appointed engineer to carry out the extensions required to Silloth sea wall required by the Holme Cultram Urban District Council. Plans are to be prepared immediately.

THE Brighton Board of Guardians on the 13th inst. adopted a scheme for the erection of four receiving homes at a cost of 5,100*l.*, and a separate hospital at a cost of 1,500*l.*, on a site at Warren Farm Schools.

THE Bishop of Guildford recently consecrated the new nave and chancel of Aldershot Parish Church. The church now consists of a new chancel, nave, and north aisle, designed by Mr. T. G. Jackson, R.A., the old nave and chancel forming the south aisle and side-chapel.

THE foundation-stone of a new church at Whorlton, near Newcastle, was laid on the 15th inst. The first portion of the work will consist of a chancel, vestries, organ chamber, and heating chamber. Mr. A. B. Plummer, F.R.I.B.A., diocesan architect, has prepared the design.

H.M. CONSUL at Christiania reports that, according to the local press, plans have been prepared by the Christiania Harbour Board for the erection at that place of a corn silo with a capacity of 8,000 tons, at a cost of between 22,000*l.* and 28,000*l.* The Board contemplate letting it on a twenty-five years concession to a private company.

AT Edinburgh Dean of Guild Court last week warrants were granted to the proprietors of Edinburgh Academy to erect a new pavilion at Inverleith Place, and to the Edinburgh Provincial Committee for the erection of new buildings in St. John Street and South Back Canongate.

THE Bexley Heath Urban Council and a committee of ratepayers have decided to mark the Coronation by erecting a clock-tower in the market place. The design submitted by Mr. Walter Epps, A.R.I.B.A., architect, of Bexley Heath, has been selected.

THE Edinburgh School Board have decided to purchase from the Governors of George Heriot's Trust ground at Bellevue, which is let on lease at the present time to the Corporation of Edinburgh as a public park. The area extends to about 4½ acres, and the price to be paid for it is 8,280*l.*

THE Guardians of the Godstone Union invite schemes by the 19th inst. to equip the laundry at the workhouse, Bletchingley, near Redhill, for mechanical working on a basis of 4,000 pieces per week. The scheme must include the

adaptation of all existing machinery to steam power as far as practicable.

THE Board of Education have approved the plans submitted by the Monmouthshire Education Authority for a training college for 100 men teachers at Caerleon. The tender of Mr. F. Bond, Cardiff, amounting to 28,248*l.*, has been accepted for the work. The plans were prepared by Messrs. Alfred Swash, F.R.I.B.A., & Son, Newport.

As a memorial to Lord Clive, who was born in the parish in 1725, a church house and institute have been erected at Moreton Saye, near Market Drayton, and was opened on Tuesday. The building, which contains a large concert room, billiard room, reading rooms, &c., has been designed by Mr. Craig, A.R.I.B.A.

THE Erdington Urban District Council have approved plans and estimates for the Bromford area scheme at the following estimated costs:—Sewering from Erdington Hall to Ashold Farm, 12,500*l.*; surface water drainage, 6,300*l.*; widening and improving Wheelwright Road, &c., 5,600*l.*; total cost, 24,400*l.* Application to the Local Government Board will be made for the necessary loans, together with a further 9,000*l.* for wood-block paving in Slade Road.

THE nave of All Souls Church, Ascot, has recently been dedicated. The chancel, side-chapel, and transepts were built by Lord Stanmore some few years ago in memory of his late wife. Afterwards he contributed 2,000*l.* of the 3,000*l.* required to complete the nave, and also built a baptistery. A spire and north porch remain now to be added. The church was designed by the late Mr. J. L. Pearson, R.A., and has been completed by his son, Mr. F. L. Pearson.

THE Cheltenham Town Council at their last meeting decided (1) that the land at the south-west end of the Winter Garden building be selected as a site for the erection of Municipal Offices, and (2) that architects be invited to send in designs and plans for the building in competition, and that premiums of 100*l.* and 50*l.* be offered for the first and second award, the premium to merge in the commission in the event of the plans being adopted and the architect employed in carrying out the building.

LORD HASTINGS has decided to turn Hartley, on the Northumberland coast, into a high-class resort. Recently he signed an agreement by which the North-Eastern Railway Company would construct a railway between Monkseaton and Seaton Sluice, Lord Hastings to pay two-thirds of the interest on the capital expended by the company, that interest to be reduced 2*l.* annually for each house built in Hartley. Lord Hastings is also prepared to hand over the sea front for an esplanade, provided the new Urban Council maintain it for the benefit of the general public.

At the last sitting of Paisley Dean of Guild Court the following linings were granted:—Messrs. Brown & Polson, starch manufacturers, to erect a new floor and roof in the engine-room of their works at Carriagehill; A. F. Craig & Co., engineers, to put up an erecting shop in their works in MacDowall Street; Richard Stutt, to make alterations and additions to his property at 201 Neilston Road; Peter F. Ross, draper, 14 Wellmeadow, to erect saloons, stores, and other additions to his property there; and Wm. M'Ghee, builder, to erect two tenements of two storeys each at 5 and 6 Well Street.

A conference will be held at Toynbee Hall, in White-chapel, on Monday evening next, at 8.15, in order to discuss Unemployment Insurance proposals. This portion of the National Insurance Bill at present chiefly concerns every employer and workman in the building and engineering trades, and it is hoped that all organisations in East London in these trades, whether employers or workmen, will send representatives. The object of this conference, which will follow the lines of the very successful conference on the scheme, is to elucidate and discuss in a frank and friendly manner the proposals of the Bill, and consequently no resolutions will be proposed.

THE Liverpool City Council last week referred back a recommendation that the scheme submitted by the Corporation Surveyor for the erection of baths at George's Dock site should be approved. A resolution was also withdrawn by the Finance Committee "that competitive designs for the elevations only of the proposed baths, to be accompanied by estimates of the cost of carrying out such designs, be invited by advertisement from architects, and that premiums of 100, 50, and 25 guineas respectively be awarded to the architects whose designs this Committee shall consider to be respectively first, second, and third in order of merit."

THE York City Council recently made an application to the Local Government Board for sanction to the borrowing

of the sum of 57,637*l.* for sewage purposes. The Board intimated that the scheme as submitted to them was generally satisfactory, but they required certain amendments to be made, and the plans amending and amplifying accordingly, and re-submitting for approval. The City Surveyor has now amended the plans accordingly and revised his estimate of the cost, which will be increased by 5,141*l.*

THE Glasgow Parish Council last week approved generally of plans for a colony for epileptics, proposed to be erected on ground at Muckcroft, rented by the Council from the Glasgow District Lunacy Board. These plans provide for the erection of four villa blocks to accommodate a total of about 200 patients, with provision for the erection at a later stage, if necessary, of two additional villa blocks. The total cost is given as 43,520*l.*, equal to a cost of 176*l.* per bed on the building of four villa blocks, with administrative buildings for six villa blocks, and a cost per bed of 145*l.* should the whole six villa blocks be proceeded with. But the question of cost is to be reconsidered.

THE Finance Committee of the Birmingham City Council have just been authorised to borrow 17,615*l.* for the erection of a Council school in St. Benedict's Road, Small Heath. The Finance Committee were also authorised to borrow 3,233*l.* for providing accommodation for cookery, laundry, manual, and housewifery instruction at Dudley Road, Camden Street, and Tilton Road Council Schools. At the same meeting the Council authorised the Education Committee to purchase a site, having an area of about 7,000 square yards, in Willow Avenue, at 5*s.* per yard, and to erect thereon a school for about 600 children.

THE Kensington Borough Council recently adopted resolutions urging the London County Council (1) to claim in aid of the rates the profits of the Middlesex Deed Registry, estimated at 15,000*l.* a year, following the example of the Yorkshire County Councils, who receive the profits of the Yorkshire registries; and (2) to take action in accordance with the recommendation of the Royal Commission on Land Transfer to obtain the extension of the Middlesex Deed Registry to the whole County of London, which, it is estimated, would increase the profits to 27,000*l.* per annum. The movement has already obtained the support of the following Metropolitan Borough Councils:—Battersea, Bermondsey, Chelsea, Fulham, Hammersmith, Poplar, Stoke Newington, Wandsworth, and Woolwich. The Local Government Committee of the London County Council have the proposals under consideration.

THE United Kingdom Granite and Whinstone Quarrymasters' Association, at their annual meeting, had under consideration the National Insurance Bill, and, after discussion, adopted a resolution to the effect that, while approving of any principle whereby provision through the State should be made compulsory for the insurance of employees against sickness, invalidity, and unemployment, the Association are of opinion that the provisions of the National Insurance Bill impose upon employers of labour a burden the incidence of which it is unjust they should be called upon to bear; that the contribution proposed to be exacted from employers, being made a first charge, is a tax which it is inequitable should be imposed upon an industry already overburdened through workmen's compensation liability and others; and it is calculated seriously to cripple its development, thereby being prejudicial to the employees themselves by tending to decrease employment.

MR. P. MORRIS, county architect, has submitted to the Devon Education Committee a memorandum with reference to the report of the Departmental Committee appointed to consider the cost of school buildings. He said a school building with suitable hall accommodation, but without rooms for special subjects, should cost from 33*s.* 4*d.* to 37*s.* 6*d.* per head for every penny per cubic foot. These figures assumed that there was nothing in the site or locality which would entail extraordinary expenditure. The corresponding figures for the Devon County Council schools were 32*s.* 8*d.* (minimum 25*s.*, maximum 38*s.*). The cost of very small schools was said to present a much wider range of difference, although under favourable circumstances they had been built for 7*l.* per head. One of the Devon County Council schools of this type had been built at a cost of 6*l.* 18*s.* 10*d.* per head, whilst the average cost had been 10*l.* 4*s.* 11*d.* per head. Questions of drainage, water supply, and accessibility must obviously render unreliable any definite statement as to what should be the average cost of such buildings. Mr. Morris pointed out that the cost of building in Devon is largely increased in many cases by the levels of the site and other causes.

THE
Architect and Contract Reporter.

FRIDAY, JUNE 23, 1911.

Published weekly, subscription 19s. per annum for Great Britain, and for Colonial and Foreign subscriptions £1 6s. 6d. All business communications to the Managing Director,

P. A. GILBERT WOOD,

Publishing Offices, 6-11 Imperial Buildings, Ludgate Circus, London, England.

Telephone No. 4725 Holborn.

Branch Offices at 43 OLD QUEEN STREET, S.W., Messrs. W. HAY FIELDING & CO. being the representatives for all business purposes.

The Birmingham Offices are at 102 COLMORE ROW.

** Entered in the United States of America as second-class matter.

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EDITORIAL NOTICES.

The Editor will always be pleased to examine drawings or articles with a view to publication, but cannot be responsible for the safety of those sent, though every reasonable care will be taken. Contributors desiring payment should clearly state their wishes. No payment will be made until after publication, and a commission to prepare articles or drawings does not necessarily imply acceptance or approval.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit the insertion of lengthy communications.

TENDERS, ETC.

** As great disappointment is frequently expressed at the nonappearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

ATHENS.—Sept. 25.—An international competition of plans is invited by the Greek Ministry of the Interior (Public Works) for the erection of a Court of Justice at Athens. The cost of the building must not exceed 160,000*l*. A first prize of 800*l*., and a second prize of 320*l*. will be awarded. The Greek Official Gazette, containing particulars (in Greek and in French) may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, E.C.

LOWESTOFT.—July 31.—The education committee invite designs for an elementary school at Roman Hill for 500 boys. Premiums of 20, 10, and 5 guineas. Send application for particulars and 10*s*. 6*d*. deposit by June 24 to Mr. R. Beattie Nicholson, Town Clerk, Town Hall, Lowestoft.

NORTHAMPTON.—July 7.—The Borough Education Committee invite architects practising in the borough or county of Northampton to submit on the 7th July plans for a secondary school for girls, to be erected in St. George's Avenue. A plan of the site and a copy of the instructions containing the terms and conditions of the competition may be obtained from Mr. Stewart Beattie, Secretary, Education Offices, 4 St. Giles's Street, Northampton.

SCOTLAND.—Aug. 1.—The Committee of the Battle of Largs Memorial Fund invite sketches of a suitable memorial to commemorate the battle of Largs, 1263. The site of the memorial will be on the foreshores of Largs, but the exact position has not yet been determined. The committee have at their disposal the sum of 300*l*., which is the maximum sum to be expended on the erection. A premium of 5*l*. will be paid for the successful sketch. The sketches will be judged by the subscribers. Mr. Peter Morris, Town Clerk, Largs.

WALES.—July 1.—Competitive designs are invited for chapel, schoolroom, and classrooms to be erected at the junction of St. Alban's Road and Finsbury Terrace, Swansea. Particulars and conditions may be obtained from the Secretary, Mr. D. Walters, 19 Brooklands Terrace, Swansea.

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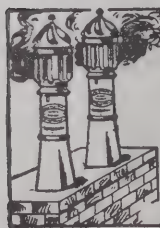
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YEovil.—The Corporation of Yeovil invite competitive designs as follows:—(1) For laying out a site of about 10 acres of land for the purpose of erecting houses for the working class, and (2) for houses to be erected thereon. In respect of each class of design premiums of 20% and 10% will be awarded. Particulars and conditions of site may be obtained upon deposit of 10s. 6d. from the Town Clerk, Yeovil.

CONTRACTS OPEN.

BACUP.—June 26.—For the erection of a tramway car shed. Deposit 2l. 2s. Mr. J. S. D. Moffet, Tramway Offices, Mellor Street, Rochdale.

BARNLEY.—June 26.—For the reslating of the workhouse. Mr. S. J. Crawshaw, master, Union Workhouse, Barnsley.

BILLENGE.—July 14.—For the erection of an elementary school at Billenge, near Wigan. Deposit 2l. Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston, Lancs.

DOWRAN.—June 24.—For erection of a farmhouse at Bonhay Road, consisting of concrete paving and the re-dowran, in the parish of St. Just-in-Penwith. Mr. James Thomas, the Farmhouse, Dowran, Cornwall.

DURHAM.—July 11.—For (1) Erection of Seaham Harbour Upper Standard School (for about 480 scholars) and Butterknowle New Council School (for about 200 scholars); Mr. W. Rushworth, Shire Hall, Durham. (2) Alterations at Escombe Council School; Mr. N. Richley, Shire Hall, Durham.

EASTBOURNE.—June 28.—For the repair and redecoration of chapels, &c., at Ocklynge Cemetery. The Superintendent's Office at the Cemetery, or Messrs. Coles, Sons & Tilburn, clerks to the Board, Claremont Chambers, Eastbourne.

EAST PRESTON.—July 3.—For alterations and additions to the laundry buildings at the workhouse, East Preston, near Worthing. The Workhouse, or Mr. A. Shelley, clerk, Town Offices, Littlehampton.

EXETER.—June 30.—For alterations and additions, including a new front, at Messrs. Fox, Fowler & Co.'s Bank. Deposit 3l. Messrs. E. H. Harbottle & Son, architects, County Chambers, Exeter.

FALMOUTH.—June 30.—For alterations and additions to the residence known as "Glendurgan," near Falmouth. Mr. G. H. Fox, Wodehouse Place, Woodlane, Falmouth.

FLIXTON.—July 1.—For construction of extensions to the outfall works at Flixton, near the Irlam Locks, on the Manchester Ship Canal. Messrs. J. P. Wilkinson & Son, M.M.Inst.C.E., 301 Cathedral Street, Manchester.

GLASGOW.—June 26.—For the construction of a granary at Meadowside, Partick, for the trustees of the Clyde Navigation. The granary to be 312 ft. long by 72 ft. wide, inside dimensions, and 14 storeys in height. The building to comprise two portions, viz., grain bins or silos to contain 20,000 tons of grain, and floor warehouse to store 11,000 tons of grain. Tenders are to be for the construction of the granary in the following methods, viz.: (a) Entire building of reinforced concrete; (b) entire building of reinforced concrete, but with brickwork facing the external walls; (c) silos of reinforced concrete with external walls faced with brickwork; floor warehouse having external walls of brickwork, internal columns of cast-iron, and floors of rolled steel beams and concrete. Tenderers may offer for one or more of the alternative systems of construction. Send 5l. deposit to the Trustees' Engineer, Mr. T. R. Mackenzie, general manager and secretary, 16 Robertson Street, Glasgow.

GUILDFORD.—For alterations to Messrs. Timothy White Co.'s premises, 39 High Street. Messrs. Rake & Cogswell, architects, Prudential Buildings, Portsmouth.

HADLOW.—July 3.—For execution of summer repairs at Hadlow Council School. Mr. Wm. Stow, correspondent, Hadlow, Tonbridge.

HEMEL HEMPSTED.—July 4.—For erection and completion of a public elementary school building for about 250 scholars, playsheds, boundary fences, drainage, and other works in connection therewith, at London Road, Two Waters. Deposit 5l. Mr. W. R. Locke, Town Hall, Hemel Hempsted.

IPSWICH.—July 24.—For enlargement of the following schools, for the East Suffolk County Education Committee:—Hollisley Council School, near Woodbridge, by 60 places; Ramsholt Council school, near Woodbridge, by 28 places; Reydon Council school, near Southwold, by 60 places. Send applications immediately to Mr. J. Webb, surveyor, County Hall, Ipswich.

IRELAND.—July 4.—For the erection of a Carnegie Library in Lower George's Street, Kingstown. Apply at the

Town Hall, Kingstown, or Messrs. O'Callaghan & Webb, 31 South Frederick Street, Dublin.

LENHAM.—June 30.—For the execution of summer repairs at Lenham, Platt's Heath Council School. Mr. F. Day, correspondent, Lenham, Maidstone, Kent.

LEWISHAM.—June 27.—For constructing a lavatory and making the necessary alterations in forming additional office accommodation at the Town Hall, Catford, for the Lewisham Borough Council. Charge 5s. The Surveyor's Department, Town Hall, Catford, S.E.

LEYTON.—July 6.—For constructing a condenser pit, foundation for turbo-generators and colling towers, &c., at the Electric Light and Power Station, Cathall Road, Leytonstone. Mr. E. H. Essex, A.M.I.C.E., surveyor, Town Hall, Leyton.

LONDON.—June 27.—Constructional schemes with tenders are invited for the erection in reinforced concrete of new buildings for His Majesty's Stationery Office and Office of Works Stores in Waterloo Road and Stamford Street, S.E. Any system of construction may be adopted for the whole or part of the work. Deposit 3l. 3s. Mr. R. J. Allison, A.R.I.B.A., H.M. Office of Works, &c., Storey's Gate, S.W.

LONDON.—July 3.—For erection of a chimney shaft, 110 feet in height, at the Public Baths, Latchmere Road, Battersea, S.W. Mr. W. Marcus Wilkins, town clerk, Town Hall, Battersea, S.W.

LONDON.—July 6.—For certain repairing, painting, distemper, and whitewashing, &c., work, to the interior, and painting, cleaning, &c., work, to the exterior of the Guardians' Administrative Offices, 283 Tooley Street, S.E., and the relief offices, &c., Shad Thames, for the Bermondsey Board of Guardians. Send application by June 30, accompanied by 10l. bank note, to Mr. E. Pitts Fenton, clerk, 283 Tooley Street, S.E.

MASHAM.—June 27.—For erection of a Wesleyan Chapel at Breary Banks, near Masham. Mr. T. Trotter, Masham, Yorks.

MORLEY.—July 3.—For the various works required in extensions and additions to Daisy Hill Mills. Mr. T. A. Buttery, L.R.I.B.A., Queen Street, Morley; and 1 Basinghall Square, Leeds.

NORTH ORMESBY.—June 28.—For the proposed alterations and improvements at North Ormesby, Derwent Street Council Schools, for the North Riding of Yorkshire County Council Education Committee. Mr. J. C. Wrigley, secretary, education offices, County Hall, Northallerton.

NOTTINGHAM.—June 26.—For alteration and adaptation of the Residence, Edwards Lane, for the accommodation of children, for the Guardians. Deposit 2l. 2s. Mr. W. c. Starr, architect, 12 Victoria Street, Nottingham.

PENLEE POINT.—July 8.—For the construction of a masonry lifeboat house and reinforced concrete slipway, near Penlee Point, in the parish of Paul, Cornwall, for the Royal National Lifeboat Institution. Deposit 1l. Colonel T. H. Cornish, hon. secretary, Parade Street, Penzance. Mr. W. T. Douglass, M.I.C.E., 15 Victoria Street, Westminster, S.W.

RICHMOND.—July 3.—For works required in erection of a ferro-concrete footbridge (Hennebique system), across the railway at Kew Gardens, for the Richmond Town Council. Deposit 1l. 1s. Mr. J. H. Brierley, borough surveyor, Town Hall, Richmond, Surrey.

ROCHESTER.—July 11.—For the construction of an open-air swimming bath in reinforced concrete, 240 feet long by 60 feet wide, at their Playing Field, Willis Avenue, for the Sir Joseph Williamson's Mathematical School. Mr. William Banks, A.M.I.C.E., Guildhall, Rochester.

ST. BEES (CUMBERLAND).—June 28.—For the various trades required in the erection of a house at St. Bees. Messrs. Nelson & Brindle, architects, 22 Lowther Street, Whitehaven.

ST. DAY.—June 30.—For building a schoolroom, for the Trustees of the Primitive Methodist Church. Mr. John Eva, Trefula Farm, St. Day, Cornwall.

SALISBURY.—July 3.—For the fitting up of rooms at the School of Science and Art, New Street, for instruction in laundry work and housekeeping. Mr. G. Harris, clerk, 3 Castle Street, Salisbury.

SCOTLAND.—June 27.—For the erection and completion of a church and vestries, together with the enlarging of the present school hall, for the Deacons' Court of New Cumnock United Free Church. Deposit 1l. 1s. Mr. W. Beddoe Rees, architect, 3 Dumfries Place, Cardiff.

SCOTLAND.—July 3.—For the mason, joiner, plumber, and slater work of proposed dairyman's new house and alterations on byres at Asylum Farm, near Cupar. Mr. Drummond, clerk of works, F. and K. District Asylum, Cupar.

SCUNTHORPE.—July 20.—For the erection of a Council school. Send applications and 2l. 2s. deposit by July 3 to Messrs. Scorer & Gamble, architects, Bank Street Chambers, Lincoln.

SEATON DELAVAL.—June 27.—For alterations and additions to the Miners' Hall. Mr. Duncan Robertson, the Mechanics' Institute, Seaton Delaval.

SENNEN COVE.—June 30.—For erection of new coast-guard buildings at Sennen Cove, near Land's End, Cornwall, consisting of houses for an officer and six men. The Superintending Civil Engineer, H.M. Dockyard, Devonport.

SOUTHALL.—June 27.—For the construction of an iron and glass covered-way to the entrance to the Public Offices. Mr. R. Brown, A.M.I.C.E., F.S.I., &c., engineer and surveyor, Public Offices, Southall.

SOUTHAMPTON.—June 27.—For widening and reconstructing the bridge and roadway at the junction of Oakley Road and Mousehole Lane. Deposit 1l. 1s. with the Borough Treasurer, the Borough Surveyor's Office, Municipal Offices, Southampton.

SOUTH BANK.—July 10.—For the purchase and pulling down of the existing Town Hall buildings. Mr. C. W. Cocksoll, C.E., surveyor, South Bank.

STOCKPORT.—June 24.—For the following works in connection with the Dialstone Lane Hospital extension, for the Corporation, viz.:—(1) Buildings, (2) draining and road making. Deposit, contract (1) 3l. 3s.; contract (2) 2l. 2s. Mr. J. Jepson, architect, 35 Great Underbank, Stockport.

THURNSCOE.—For the supply of pumps and engines, erection of engine-house, laying rising main and carrying out cement concrete work at the sewage outfall works. Mr. J. Ledger Hawksworth, clerk, Council Offices, Bolton-upon-Dearne.

THURSLY.—For alterations and additions to the Church of England school. Send applications to Messrs. Beasley & Burrows, architects, 17 Victoria Street, Westminster, S.W.

TRURO.—June 27.—For the erection of a bridge at Carvinack Watering. Mr. Coulter Hancock, clerk to the District Council, 12 Princes Street, Truro.

TRURO.—July 6.—For erection of extensive additions and alterations to Truro Post Office. Mr. Leonard Winn, architect and surveyor, 27 Boscawen Street, Truro, and Free Library Chambers, Redruth; or Mr. A. R. Jenkin, F.S.I., Trewirgie Office, Redruth.

WALES.—June 26.—For a pair of semi-detached villas at Aberbargoed, for Messrs. Fisher & Williams. Mr. D. Williams, Duffryn Stores, Aberbargoed.

WALES.—June 27.—For repairs and renovations at 9, 11, 13, and 15 Romilly Crescent, Cardiff, for the Guardians. Mr. A. J. Harris, clerk, Union Offices, Queen's Chambers, Cardiff.

WALES.—July 6.—For the erection of a fence wall and iron railing round the site of a proposed sanatorium at Pontsarn, for the Merthyr Tydfil Union. Mr. Thomas Roderick, architect, Clifton Street, Aberdare.

WALES.—July 7.—For new mixed Council school (260 places) at Gurnos, Ystradgynlais, and new infants' Council school (160 places) at Penrhos, Ystradgynlais, for the Breconshire Education Committee. Mr. C. W. Best, M.I.C.E., surveyor to the Breconshire Education Committee, County Hall, Brecon.

WALTHAMSTOW.—June 26.—For the supply, delivery and erection of the steelwork, &c., required for the construction of a steel turbine gallery at the Generating Station, Exeter Road, Hoe Street. Deposit 1l. 1s. Mr. G. W. Holmes, A.M.I.C.E., engineer to the Council, Town Hall Annexe, Walthamstow.

WOKINGHAM.—June 28.—For the construction of public conveniences adjoining the Market Place; also for the construction of a concrete retaining wall faced with stone; also for kerbing, channelling, and concrete slab paving, &c., in Denmark Street and Market Place. Deposit 1l. Mr. C. W. Marks, borough surveyor, Town Hall, Wokingham.

YORKS.—June 30.—The West Riding Small Holdings and Allotments Committee invite tenders for the following works:—Whole or separate tenders.—No. 1. New farmstead at Church Fenton, near York. No. 2. New farmhouse at Knapton, near York. (Trades.—Builder, joiner, tiler, plasterer, plumber, painter.) Whole tender.—Alterations and repairs to Rose Farm, Church Fenton, near York. The West Riding Architect, County Hall, Wakefield. Send 1l. in each case to the West Riding Treasurer, County Hall, Wakefield.

PLANS have been passed for the erection of a church hall at Skildon Road, Blaydon.

TENDERS.

AYLESBURY.

For alterations to the infirmary at the Union House. Mr. F. TAYLOR, A.R.I.B.A., architect, Aylesbury.

Fisher	£1,294	0	0
Webster & Cannon	1,258	0	0
Mayne & Son	1,190	0	0
Green & Co.	1,187	0	0
Higgs	1,153	0	0
HONOUR & SON, Tring (provisionally accepted)	1,127	0	0

BLETCHLEY (BUCKS).

For the erection of house on golf course. Mr. W. B. STONEBRIDGE, architect, Bedford and Woburn Sands.

Negus	£466	0	0
Bonner	379	0	0
Edwards	375	0	0
Yirrell	375	0	0

Revised tenders.

Edwards	£399	0	0
YIRRELL, Bletchley (accepted)	396	0	0

CAPEL.

For the erection of a dwelling under the Small Holdings Act.

Tully	£349	0	0
Meads	345	0	0
Lawrence	286	5	0
Barden & Head	272	0	0
MIDDLETON, Peckham Bush (accepted)	265	10	0

CHARLWOOD.

For erection of a dwelling-house and pair of shops at Charlwood, Surrey. Messrs. HALLETT & BALLARD, architects, Horley.

	A	B.
Cook & Son, Crawley	£1,050	0 0
Mitchell, Horley	1,036	0 0
King & Son, Smallfield	1,025	0 0
Ockendon, Crawley	902	0 0
Arthur, Charlwood	875	0 0
T. WICKENS, Charlwood (accepted)	960	0 0

A—Marble linings to shop walls. B—Glazed tile linings to ditto.

CHELMSFORD.

For the erection of five cottages in Springfield Street. Messrs. MAWHOOD & SON, architects, Chelmsford.

Potter & Son	£1,270	0	0
Fincham	1,190	0	0
Barker	1,150	0	0
Simmons & Co.	1,069	0	0
Gowers	1,035	0	0
WEIGHT, Chelmsford (accepted)	1,032	10	0

CLIFTON.

For the erection of rectory farmhouse. Mr. W. B. STONEBRIDGE, architect and diocesan surveyor, Bedford and Woburn Sands.

Jones	£654	0	0
Coleman & Co.	634	0	0
Negus	630	0	0
Wright	572	0	0
Wrycroft & Sons	555	0	0
WARTAR & DUNSTALL, Bedford (accepted)	550	0	0

ERITH.

For erection of new pavilion, for the Higher Education Committee.

Friday & Ling	£148	0	0
Harbrow	145	0	0
Gunning & Son	145	0	0
Harrison	132	10	0
Chandler	127	15	0
Smith	120	15	0
Wire Wove Roofing Co. (recommended)	115	0	0

FINCHAM.

For erection and completion of semi-detached houses at Fincham, Norfolk. Mr. L. F. EAGLETON, architect, King's Lynn.

Johnson & Son	£540	0	0
Riches	524	0	0
Hall & Lawson	520	0	0
Barnes & Co.	515	0	0
Collins	510	0	0
ASHBY, LTD., Downham Market (accepted)	500	0	0

FROME.

For the works comprised in the following contracts, for the Urban District Council, viz.:—Contract No. (5) laying a new outfall sewer and construction of all manholes thereon, together with detritus tanks, screening chamber, and pump wells; (6) erection of destructor-house and pumping station buildings; (7) erection of dwelling houses for the works foreman and night stoker; (8) erection of a refuse destructor. Mr. F. W. JONES, A.M.I.C.E., engineer, Frome.

Contract No. 5.

IRELAND, Bath (accepted) £2,473 3 5

Contract No. 6.

Hughes & Stirling £1,452 9 6
Chamberlain 1,285 10 8
Seward 1,142 17 11
Ireland 1,142 12 3
HODDER & SONS, Frome (accepted) . . . 1,054 14 5

Contract No. 7.

Hughes & Stirling £896 0 0
Ireland 888 3 0
Barnes 708 3 0
Hodder & Sons 682 3 0
Seward 595 0 0

Contract No. 8.

Meldrum Bros. . . . £2,508 0 0
Goddard, Massey & Warner 2,440 6 6
Heenan & Froude 2,189 0 0
Manlove, Alliot & Co., Ltd. . . . 2,180 6 0
Hughes & Stirling 1,969 19 0
Horsfall Co. . . . 1,950 0 0
DAWSON & MANSFIELD, Manchester (accepted) . . . 1,893 0 0

GRIMSBY.

For addition of bathrooms to public convenience, Oxford Street. Mr. H. GILBERT WHYATT, A.M.Inst.C.E., borough engineer and surveyor.

Hewins & Goodhand £450 0 0
Thompson Bros. . . . 417 10 0
Gilbert 406 10 6
Hipkin 398 15 8
Kirtan 381 2 1
Richardson 372 10 0
Swaby & Walsham 368 10 0
Borrill & Cheesman 362 0 0
E. SMITH, Grimsby (accepted) . . . 336 0 0

HARWICH.

For laying out extension to cemetery, Upper Dovercourt. Mr. F. G. VINCENT-BROWN, architect, Dovercourt.

Grimwood & Sons £1,862 0 0
Wilson, Border & Co. . . . 1,708 0 0
Saunders 1,504 0 0
Bennett 1,480 0 0
Downs & Sage 1,375 0 0
FISHER & WOODS, Dovercourt (accepted) . . . 1,295 8 0

HORSHAM.

For the erection of workshop, stores, &c., at the Electricity Works. Mr. R. RENWICK, surveyor, Horsham.

Potter £297 0 0
Murrell Bros. . . . 287 15 0
Rowland Bros. . . . 280 0 0
Hillman & Murrell 272 0 0
LINDFIELD & SON (accepted) . . . 270 0 0

KING'S LYNN.

For reconstructing Stow Bridge (over River Ouse), Norfolk. Mr. L. F. EAGLETON, architect, King's Lynn.

Dye & Allen £1,991 0 0
Brettell & Co. . . . 1,764 10 10
Hall & Lawson 1,586 0 0
W. A. BARDELL, King's Lynn (accepted) . . . 1,500 0 0
F. & S. Dickerson 1,369 0 0

LETCHWORTH.

For erection of a block of four cottages, for the Hitchin Rural District Council. Mr. J. C. HOOPER, surveyor, Hitchin.

Gregory £825 0 0
Jeffs Bros. . . . 660 0 0
Newton 644 0 0
Tarrier & Bidwell 640 0 0
Collins 630 0 0
Souster 616 15 0
Beckley & Turpie 615 0 0
PALMER & RAY, Letchworth (accepted) . . . 535 0 0

LONDON.

For erection of a new wing at the Miller General Hospital, Greenwich, S.E. Messrs. K. D. YOUNG, F.R.I.B.A., & H. HALL, F.R.I.B.A., architects, 17 Southampton Street, Bloomsbury.

Ashby & Horner £22,061 0 0
Holland & Hannen 21,848 0 0
Carmichael 21,642 0 0
Grover & Son 21,484 0 0
Rider & Son 21,332 0 0
Leng 21,178 0 0
Lovatt 21,000 0 0
Foster & Dicksee 20,955 0 0
F. & F. H. Higgs 20,950 0 0
Perry & Co. . . . 20,851 0 0
Holloway Bros. . . . 20,840 0 0
Groves 20,823 0 0
Moss & Sons 20,796 10 9
Holloway 20,700 0 0
Falkner & Sons 20,299 0 0
NASH (accepted) 19,965 0 0

TIVERTON.

For the erection of Heathcote schools, for the Education Committee.

Crockerill £5,574 0 0
Pillar & Son 5,532 0 0
Stockholme 5,449 0 0
Pollard & Son 5,320 0 0
Grater 5,278 0 0
Amery 5,195 0 0
Poole 5,079 0 0
POLLARD & Co. (accepted) . . . 4,755 0 0

USHAW MOOR.

For erection of P.M. church and school, Ushaw Moor, Durham. Mr. J. W. F. PHILLIPSON, architect, Newcastle-on-Tyne.

I. & R. Wood £1,870 0 0
Bolam 1,843 6 7
Douglas 1,836 4 7
Walton Bros. . . . 1,830 10 0
Pearson 1,830 0 0
Cook Bros. . . . 1,815 12 8
Kay & Son 1,811 2 2
Sowerby 1,800 0 0
Douglas & Son 1,761 4 2
TODD & SON, Northallerton (accepted) . . . 1,700 0 0

WAKEFIELD.

For various works required in connection with the Lawfield Lane school.

Accepted tenders.

T. Lee, excavator, mason, bricklayer, &c. . . £4,166 1 6
R. Broadhead, carpenter and joiner . . . 1,599 12 6
J. Woodhead, plumber and glazier . . . 795 0 0
W. Atkinson, slater 430 18 0
T. E. Senior, plasterer 393 0 0
G. E. Batley, ironfounder 361 0 1
Goodall, Lister & Goodall, painters . . . 170 0 0

WEYMOUTH.

For pulling down existing buildings, clearing the site for, and erecting thereon a motor garage in the Royal Hotel yard. Mr. G. A. ANDREWS, architect, Weymouth, Dorset.

Bird & Cox £984 7 6
Jesty & Baker 949 7 6
PARSONS (accepted) 894 13 0

WOKING.

For erection of sanitary conveniences at Constitution Hill. Mr. G. J. WOOLRIDGE, surveyor, Woking.

G. F. Drowley £298 0 0
Drowley & Co. . . . 270 0 0
Aylott 250 0 0
Wallis (recommended) 233 0 0

WALES.

For the construction of intake works, concrete service reservoir, filters, excavating and refilling pipe trenches, providing and laying about 19,000 lineal yards of cast-iron water pipes, with sluice and air valves, and other works in the parishes of Llandyrnog, Llangynhafal, Llangwyfan, and Llanychan, for the Ruthin Rural District Council. Messrs. T. B. FARRINGTON & SON, engineers, Llandudno.

C. & W. Edwards	£7,800	0	0
Buckley	6,666	0	0
W. H. Worthington, Ltd.	6,384	2	9
G. Bell & Sons	6,357	17	10
Morley & Sons	6,016	15	3
Bushby & Sons	5,990	0	0
Roberts	5,831	14	10
Riley	5,336	15	1
Mitchell & Sons	5,138	0	0
Allen	5,100	0	0
Holloway	4,977	0	0
Brebner	4,765	0	0
Boswell	4,712	7	0
Trentham	4,712	0	0
Staveley Coal and Iron Co.	4,667	3	5
Aird & Son	4,640	3	3
JOWETT, Prescott (accepted)	4,550	0	0

YORK.

For extension of workhouse, Huntington Road, for the Guardians. Mr. J. H. MORTON, F.R.I.B.A., architect, South Shields.

BELLERBY, York (accepted) £13,387 15 0

THERE has been placed before the Dominion Government a project for the development of electrical energy at Cedar Rapids, on the St. Lawrence River, at a cost of between 3,083,000*l.* and 4,111,000*l.* It is estimated that 500,000 h.p. can be developed.

At the last meeting of the Cheshire County Plans and Buildings Sub-committee, plans prepared by Messrs. John Davies & Sons, Chester, of a proposed Council school at Hoole were approved and forwarded to the Board of Education. The committee took the same course with plans for a Roman Catholic school proposed to be erected in Ellesmere Port. Mr. H. Beswick, county architect, in his report, stated: The new building is designed so that it can be built in portions, the first part to consist of a school for 150 children in three classrooms of 50 each, capable of extension by the addition of two classrooms for 55 each, which will make a one-storey building for 200 scholars with all the necessary cloakrooms, &c., complete. A further extension to be made afterwards by the addition of a first floor of four classrooms for 50 each. The site for the new school is situated at the corner of Enfield and Whitby roads. A portion of the site along the Whitby road frontage is reserved for a new church and presbytery, while the existing temporary chapel is to remain.

THE Incorporated Church Building Society held its usual monthly meeting on the 15th inst. at the Society's House, 7 Dean's Yard, Westminster Abbey, S.W. Grants of money were made in aid of the following objects, viz.: Building new churches at Abercrave, St. David, Brecons, 100*l.*; Golders Green, St. Michael, Middlesex, 100*l.*; Six Mile Bottom, St. George, near Cambridge, 50*l.*; and West Shore, Llandudno, North Wales, 40*l.*; and towards enlarging or otherwise improving the accommodation in the churches at Leytonstone, St. Margaret, Essex, 20*l.*; Llandrindod Wells (old church), South Wales, 20*l.*; Medbourne, St. Giles, Leics., 20*l.*; and Millbrook, St. Nicholas, Hants, 15*l.* A grant of 25*l.* was also made from the Special Mission Buildings Fund towards building a mission church at Bearwood, St. Dunstan, near Birmingham. The following grants were also paid for works completed:—Great Saughall, All Saints, near Chester, 45*l.*; Dalton-in-Furness, St. Margaret, 100*l.*; Hope Bagot, St. John, Salop, 15*l.*; Coldred, St. Pancras, near Dover, 15*l.*; Grainthorpe, St. Clement, Lincs., 25*l.*; and Pontycymmer, Glam., 30*l.* In addition to this the sum of 60*l.* was paid towards the repairs of nine churches from trust funds held by the Society. The Society likewise accepted a sum of money as a trust fund for the parish church of Dunton, Norfolk. The grants voted at this meeting have entirely exhausted the funds at the disposal of the committee. It should not be forgotten that the Society is entirely dependent upon voluntary contributions.

VENTILATION AND HEATING OF SCHOOLS.

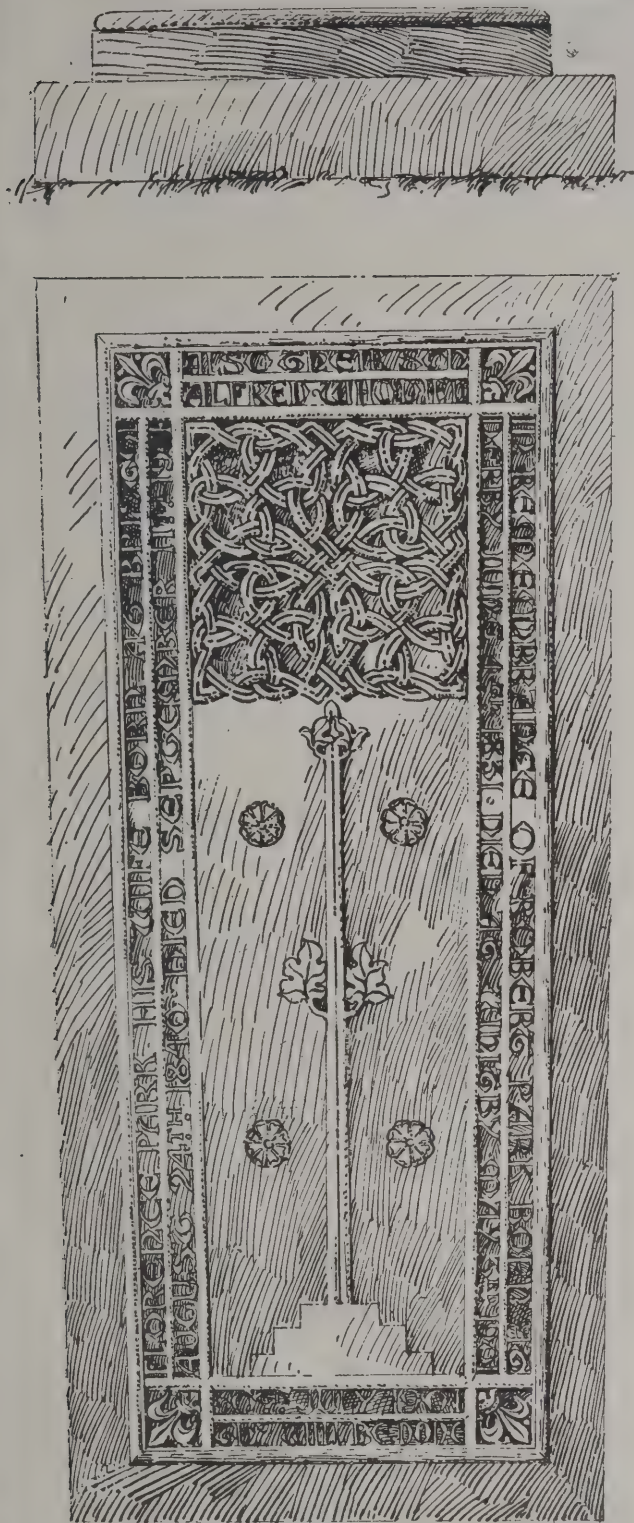
DR. H. B. MAPLETON, M.A., Medical Officer of Health to the Newton Abbot Rural and Urban Council, in his annual report, has the following interesting remarks on the above:—

Among the many conditions affecting school life, which have of late years received attention, the question of ventilation is, from the sanitary point of view, of the first importance. Medical inspection of the children is now an established routine procedure, and the logical consequence—treatment of abnormal conditions—is on the threshold; these constitute curative measures, which are generally placed first in public estimation. But in many cases disease will be avoided, and in others the treatment of it greatly facilitated, if the preventive side of the question—the environment of the children—is also thoroughly attended to. Five hours, or nearly half the day, are spent in the school-room, and, therefore, the condition of the air breathed should have at least as careful consideration as food, clothing, or any other necessity of life. Now, in practically all schools except those of the most modern construction, the arrangements for ventilation are suitable for warm weather only—that is to say, that a tolerable condition can only be obtained by the free opening of windows—and if the external temperature is low, this means that either warmth or air purity must be sacrificed, a Hobson's choice of evils, in which the former, being more immediately appreciated, has usually the first attention. The danger is most insidious, because the air in a room, if fairly pure to start with, becomes deteriorated so gradually that nothing is noticed by the occupants till an extreme condition is reached.

The effects of such a daily dose are indeterminate, and it would be hardly possible to define them exactly in any given case, or even group, of children, but, speaking generally, several may be mentioned:—(1) The vitality of the growing child, which depends to a large extent on a freely oxygenated and pure blood supply to the tissues, is adversely influenced. (2) This loss of vital power produces in its turn susceptibility to the invasion of any infective germs—such as those of phthisis, diphtheria, scarlatina, &c., which may be present, and with all the care possible such cannot be altogether excluded when children are collected together in the school-room. (3) The infection itself is more concentrated and a larger dose received. (4) The central nervous system, equally needing pure blood for its proper operation and development, suffers; the children are less receptive in regard to their lessons, and public money is thus wasted. (5) Education should comprise sanitary instruction, and to teach children that the closed window is necessary, or even desirable, contravenes one of the first principles of health.

In this county, where winters are for the most part mild, the problem is perhaps easier and less costly in solution than a more rigorous climate would entail, but even here, if anything like ideal conditions are to be obtained, certain structural alterations in most of the older schools, and not a few of comparatively modern ones, would seem necessary. Ventilation is, as a rule, obtained by casements below and swing sashes above, combined with a few Tobins' tubes or Sheringham valve inlets—mostly of such limited area as to be of very little use; in many of the former the air before entering passes through long pipes, which contain the dust of years, and are inaccessible for cleansing purposes. Ceiling outlets, on the other hand, are, if of any size, of real value, and these in most cases have been provided. It is, however, difficult to discriminate between inlets and outlets, and, as far as my experience goes, they act at different times in both capacities, according to external air movements. The casements and swing sashes when opened, especially if cross ventilation—the most important object—is attempted, are liable to create draughts, which in anything but calm and warm weather become unpleasantly noticeable; and even under favourable conditions a good deal depends on the susceptibility of the individual teacher. The position of the school also constitutes another factor; a building on apparently a most healthy and desirable site is, *ipso facto*, more exposed to air movements, and thus an external benefit become an internal disadvantage, because it encourages at certain times the closed window.

Heating is inseparably connected with ventilation; in all but the most modern schools this is effected by stoves—either open or closed—and these, however effective in a comparatively small living room, cease to be so in any large building. The area near the fires may be—and often is—over warm, while more distant parts are not warm enough.



Sepulchral Slab designed by Mr. A. BORROWDALE and executed in Hopton Wood limestone by Messrs. BORROWDALE BROS., Sunderland.

Children feel a low temperature more than the teacher, inasmuch as the former—some of whom are, perhaps, insufficiently clothed—are sitting still most of the time, while the latter is continually on the move; moreover, children, especially the younger ones, endure in silence.

It may be said that stoves and open fires assist ventilation by drawing away vitiated air; this, however, only operates to a height of 4 feet or 5 feet, and, moreover, tends to create draughts, which affect the lower extremities of those exposed to them.

With a view to ascertain local conditions in these matters, I made during the latter part of the year some tests of the air and temperature in the Newton schools, under various climatic influences. Each school was visited, and a test of the air made in every class-room; the external and internal temperature was taken, and the floor space, cubic area, and ventilation accommodation per head at the time

of visit worked out. The apparatus used for the air test had of necessity to be simple, and one giving a quick result, both because of the number of tests involved, and also to avoid disturbing the lesson. Lunge and Zeckendorff's was the method employed. In this process a measured quantity of standard solution of carbonate of soda tinted pink with phenolphthalien, is put in a bottle, and the air to be tested pumped through by means of a syringe of known capacity. When the soda is neutralised by the carbonic acid, the colour is discharged, and the amount of air necessary to effect this calculated. The change is soon apparent if the air is impure, and, on the other hand, under anything like normal conditions, the colour is difficult to discharge. Thus the actual percentage of carbonic acid is determined; the results are very fairly reliable, and any errors arising from slight deterioration of the solution are favourable to the schools. A test was made on each occasion in the open air as a control.

It is generally estimated that the normal atmosphere contains .4 parts per 1,000 of carbonic acid, but that the "permissible" amount may range up to .6 without harm; indeed, a slight increase, where many persons are congregated indoors, is unavoidable. On the other hand, anything approaching .8, where the excess is due to respiration, is perceptible to the senses of anyone entering from fresh air, and begins to be actively deleterious.

It is not that this small quantity is in itself poisonous, but where it results from respiration, waste organic matters from the lungs and bodies are also present. These constitute the real danger, and they are most readily estimated by the carbonic acid, to which they bear a constant proportion.

It will be seen that the conditions varied widely in the different schools, and even in the different class-rooms. Floor space, for instance, ranged from 6.5 to 21.5 sq. ft. per head, while it was under 10 in nine class-rooms; cubic area in the former case was only 93, and in the latter 300, but it was under 100 in two rooms only. Available area of ventilation, including all inlets and outlets (so-called) and open window space, reached 170 square inches per head in one class-room, while in another the figure was only 19; three show 22—very little more. It is generally estimated that each person should have 48 inches (24 inlet and 24 outlet), but in seventeen rooms this was not attained at the time of my visit.

The results of the carbonic acid test, without being wholly unfavourable, were sufficient to show that attention is needed in the matter, especially when it is considered that they were made under climatic conditions which could have made no severe demands on effective ventilation and heating systems.

The estimated quantity of carbonic acid was below the permissible amount of .6 in eleven rooms, while .8 per 1,000 was reached in nine more, excluding two in which the gas had been alight for a considerable time previously, which discounts the figures to some extent in their case; the remainder were between the two. Owing to the delicacy of the standard solution, it is probable that the figures are all slightly under-estimated, but they represented the apparent freshness (or otherwise) of the air as perceptible on entering, most accurately; all rooms in which .8 was approached were distinctly stuffy and unpleasant. I found that the chief factor of influence was the presence or absence of cross window ventilation, rather than cubic space or floor area per head, though, of course—other things being equal—these had their due effect.

Heating arrangements mainly consisted of open fires, though in five rooms closed stoves were in use, and the Highweek Boys' School has a hot-water radiator system throughout. During the time the experiments were proceeding there was no really cold weather, and external temperature ranged from 41 deg. to 53 deg. Fahr.—no great extreme. The internal figure was as low as 48 deg. in one class-room, and in no case exceeded 60 deg., while it was below 55 deg. in nine out of twenty-nine, or nearly one-third. In this respect the Marsh and British Schools showed the lowest figures on the whole; it is possible the site they occupy, being on the low level alluvial soil of the valley, has some influence. In one or two instances I was told that the gas was lighted at times for the sake of warmth; this is not a desirable proceeding, because it helps to exhaust the oxygen, and still further deteriorate the air supply of a crowded room. If the temperature cannot be maintained without this auxiliary, especially under comparatively mild conditions, it is evident that heating arrangements are in need of improvement.

THE STREET OF TO-DAY AND TO-MORROW.

(Concluded from last week.)

Parks.—The tree-lined street leads one to realise the position which parks, gardens, and squares must occupy in the street planning of a well-ordered city. The first merit is, of course, the fact that parks are more and more essential as the lungs of a city, offering physical exercise, recreation, and amusement to the thousands who perforce are compelled by the exigencies of modern civilisation to spend the major portion of their lives in its midst. But beyond the physical merits, colour in the street softens architectural outlines, and so adds to city beauty, and the clumps of park foliage, colour and brightness of flowers, refreshing lakes, bring æsthetic charm into town life. Happily there is no need of argument for parks, but it would be well if the various parks of a city were made into a system by means of tree-lined streets or boulevards connecting them with the city proper. At the same time, as parks are so often on the outskirts, it would be well if they were connected as far as possible in a circle of boulevards round the city. This would achieve to some extent the same result as Continental cities have already achieved by the great boulevards encircling their cities on the lines of the old fortifications. Continental cities in the matter of their parks and gardens view them as public property in a way quite foreign to England, and they are rarely walled in or railed, but free access is allowed at all times. This privilege is rarely, if ever, abused, and one thinks if only the public in England were allowed a similar concession it would add much more to the enjoyment of city life and the vandalism of which complaints are now made would gradually disappear. There should be no reason why the exclusiveness of the Britisher should come in when public property is concerned, and an unrailed park or garden would bring the spirit of Nature more into the street and the city than anything else could possibly do. How much more delightful the squares of London would be if they were, at the most, guarded only by low rails, and likely enough a move in this direction in the case of parks owned by local authorities would lead to the opening out of the privately owned squares.

Advertisements.—Next to the part which natural surroundings play in the ideal street is the matter of advertisements. No more vexed question affects city life, and while there is a general consensus of opinion that the regulation of advertisements is urgently required very little is really done. The architect and artist have every reason to grumble because the advertiser who disregards the dignity and propriety of the streets degrades the best elements of their arts. Paris, Brussels, Berlin, and Rome have restricted the advertiser in many ways, but the restrictions in England have not so far been strong enough to effect more than slight reforms. It is possible that the Housing and Town Planning Act may be used to regulate, restrain, and prevent public hoardings, and in London the County Council seems disposed to put some check on the advertising displays on house-fronts. All this, together with the gradual adoption of the permissive by-laws of the Advertisements Regulation Act of 1907, may, it is hoped, lead in time to a better view being taken of the street in an æsthetic sense.

Statuary, Fountains, &c.—When offensive public advertising is abolished, it will naturally follow that the street embellishments will be better cared for and cultivated. The function and placing of statuary in the streets, which is almost non-existent in England—that is, in comparison with the Continent—will be better understood. Public statuary has an educative and cultural mission. As the Column of July in Paris, the Column of Victory in Berlin, the Statue of Liberty at New York have all served to keep alive national traditions in these various places, let us hope that the beauty of the new Victorian Memorial in the Mall and the proposed King Edward Memorial will awaken a new consciousness in our midst. One of the greatest signs of progress is the fact that the new Victorian Memorial has been erected in a wide public thoroughfare, and not in a park. English cities unfortunately have few open spaces capable of accommodating such a memorial, but with the better development of the street in the future the function of sculpture and the fountain is bound to be recognised. The Fountain of St. Michel in Paris is a striking example of how a city might grace the junction of two great boulevards.

Smoke and Noise.—The two last æsthetic considerations of the street are smoke and noise. The former is solving itself mainly by the aid of improved scientific combustion, but the latter is, unfortunately, increasing owing largely to scientific progress in locomotion. A writer in the press

recently analysed the traffic chorus in the Strand, and showed how the very nature of the street, the presence of innumerable side streets, narrowing of the thoroughfare, &c., was largely responsible for an increase in the noise of warning of vehicles. Indeed, all the various traffic considerations which govern the street help to create the nuisance of noise. The presence of two kinds of traffic—fast and slow—in our streets, and the condition of the road surface cause as much noise as the vehicles do by being imperfectly built. By the better development of the street as a traffic artery, the improvement of the road surface, and regulation and restriction of speed, alone will come an abatement of noise. Until then traffic noise must be tolerated on grounds of public safety.

The Street of To-morrow.

Progress towards the better street, in which the whole profession of the municipal engineer is so intimately bound up, must be on lines both logical and harmonious, and the demands for comfort and well-being must appeal to all as reasonable. The wish for a better street will always be visionary until the want of it is felt. The Civic Renaissance which broke over Italy in the fifteenth and sixteenth centuries was preceded by just such a rational movement. In the middle of the thirteenth century stone bridges began to span the rivers, and city streets and squares were paved with flags. In the fourteenth century the cities were a "spectacle of solid and substantial comfort," and the way, so prepared, heralded the Renaissance. The requirements of progress remain the same to-day, and with municipalities taking the first steps, perhaps unconsciously, in the making of the better street of to-morrow, they are helping in laying the surest foundations of the ideal city, and to give effect to the words of Ruskin, who, speaking of the blocks of London houses, intersected by railways, said: "It is not possible to have any right morality, happiness or art in any country where the cities are thus built, or thus, let me rather say, clotted and coagulated into form; limited in size, and not casting out the scum and scurf of them into an encircling eruption of shame, but girdled each with its sacred pomarium and with garlands of gardens, full of blossoming trees and softly guided streams."

At the conclusion of the paper a long and animated discussion took place, in the course of which

Mr. HENRY C. ADAMS said he disagreed entirely with the suggestion that street refuges should be removed. They not only helped to regulate the traffic, but were a great protection to the public, who would not take the trouble to use subways which necessitated going down and up steps, but preferred to take their chances in crossing on the level. He deprecated uniformity of design in buildings, but agreed it was necessary that controlling power should be given to local authorities so as to prevent the erection of the monstrosities which are occasionally seen. Tall buildings were the natural corollary of the increase in the value of land, and were an economic necessity of the age. With reference to the suggested multiplication of street statuary, he was only in agreement so far as memorials, such as the Victoria Memorial, but the ordinary street statue depicting public men could not, as a rule, be considered a thing of beauty, and as an educational asset it was practically valueless, the average "man in the street" probably not even being aware of the identity of those statues he passed every day of his life. The affixing of rosettes to houses in lieu of using poles for the suspension of overhead wires would result in clearing the streets of obstructions, but there was no power to utilise the property in such a way, and he had found, in connection with tramway work, considerable opposition from the owners, who claimed compensation and from the tenants who felt, or thought they felt, the vibration of passing cars, notwithstanding the use of efficient anti-vibrators.

Mr. FAYERS (Watford) said that a few years ago the ideas contained in the paper might have been considered Utopian, but they were certainly now within the range of practical politics. He wished to know what the author meant by uniformity in design of the buildings. Long rows of houses all the same pattern were terribly depressing.

Mr. C. CHAMBERS SMITH (Sutton) did not think the height of the kerb should exceed 4½ in. to 5 in. He was a great advocate of tree planting, and had planted thousands in Sutton, at an average cost of 4s. each. If trees were carefully lopped their appearance would not be spoilt, and in any event if the work were done in February the trees were covered with leaves soon after the pruning.

Mr. BERNARD PARTRIDGE (Walthamstow) said that a large number of flowering trees had been planted in his district, which were most effective. No appreciable damage

nd been done by children or irresponsible persons. He pointed out that while the author proposed to clear all existing obstructions off the streets, he suggested adding an equal number in the shape of trees.

Mr. THOS. MUNDY (Woolwich) said that trees were wanted in all new roads at Woolwich. They were mostly plane trees, the lime not being used because of the tendency of the roots to rise near the surface to the detriment and destruction of the footpaths.

THE BUILDING TRADE AND THE INSURANCE BILL.

QUARTERLY meeting of the Northern Counties Federation of Building Trade employers was held at Seaton on the 14th inst. The chief business was the discussion of the National Insurance Bill and the consideration of report of their Executive Council on the matter.

The observations of the Council included the following:— In the first place your Council feel that no substantial reason has yet been advanced for imposing upon the employers the burden of financing the insurance of the health of their workpeople. The benefit of this insurance will be reaped directly by the workpeople themselves and indirectly by the State. The employers will gain nothing personally by making them a party to the measure, and their trade is not able to bear the constant imposition of burden upon burden in the way of legislation and taxation. The present Bill entails greater hardships upon them than those sought to be levied.

"Your committee feel that health insurance and accident insurance should have been dealt with as a whole, as they are inter-dependent; a perusal of the provisions of the last part of the Bill and the reference to the benefits under the Workmen's Compensation Acts therein will prove this. They feel that such a procedure would have been more desirable than linking up with health insurance the question of unemployment. They feel that scant justice has been done in the very important matter of unemployment, and the latter part of the measure is just the skeleton of a Bill which leaves much to the imagination of the Legislature, the inactivity of the Board of Trade, and the resources of the Treasury.

"Your committee recommend that the National Federation and the Employers' Parliamentary Council be urged to watch very carefully the progress of the measure, and take the necessary steps to have such amendments as are considered advisable introduced into the Bill through its different stages."

Mr. F. Ranken (Sunderland), the Chairman, said the Executive Council were of opinion that the Bill had been hastily considered, and was not in the interests of employers. There were grave matters in it affecting the trade, and they must enter their protest against the Bill as soon as possible.

Clause 51, which provides against distraint for twelve months during sickness, was referred to by Mr. Robertson (South Shields), who remarked that it was a very serious matter for a builder who was also a large property owner, and they should protest strongly against that clause alone.

The Secretary mentioned in this connection that if the sickness was due to the fault of the employers' works the employers had to make up to the sickness fund the extra cost which the actuary certified had been incurred. This would not apply in the case of one man, but only in the event of the sickness of several men being traceable to the works where they were employed.

Mr. Heslop (Newcastle) questioned whether the Chancellor of the Exchequer dared push the scheme forward. It could be the beginning of the end of the voluntary friendly societies as they understood them. This was a malicious and vindictive attack upon the thrifty and the property owners of the country.

Mr. J. Proud (West Hartlepool) commented on the fact that the only criticism of the Bill up to the present time in the House of Commons had come from the Liberal side.

The report was adopted.

The representatives of the Scottish Building Trades' Federation, whilst approving of the general principle of the Bill in relation to part one, says a memorandum prepared by the Executive Committee, take serious exception to several of the clauses. The Bill is of a far-reaching character, requiring much elucidation, and it is strongly urged that no attempt should be made to rush the Bill through Parliament. In its present form it will adversely reflect upon the building trades." The Government have in the Bill admitted the

principle of contributing payments by State, employers, and workmen, in regard to the liability for sickness, and it is vital in the interests of the building trade that that principle should be extended to liability for accident. At present the employer is liable to his workmen for accident at Common Law, and under the Employers' Liability and Workmen's Compensation Acts. This obligation is an extremely heavy one, and in the already depressed condition of trade it is felt to be most unjust that by the scheme of the Bill there should be a further heavy obligation imposed upon him. Relief to the extent of contribution in the direction of accident insurance is accordingly of urgent necessity. At a recent meeting held in Edinburgh the clauses of the Bill were considered in detail, and it was agreed to co-operate with the National Federation of Building Trades Employers of Great Britain and other Associations in taking united action to secure amendments in regard to the administration of benefits and the constitution of the local Health Committees. Objection *in toto* was urged to the clause dealing with excessive sickness, and to the clause proposing to make a distress or execution illegal in certain cases. Unanimous opposition was expressed against part two of the Bill, dealing with insurance against unemployment. It being solely for the benefit of the unemployed, the contribution should, they contend, be entirely paid by the State, and no penalty should attach to an employer on account of his being unable to find work for his workmen.

VICTORIA AND ALBERT MUSEUM.

THE following recent acquisitions have now been placed on exhibition in the Department of Engraving, Illustration, and Design:—

A series of working proofs of aquatint engravings, "Sunrise o'er Whitby Scaur," "Bosham," "The Curfew, Rye," and "Sea-piece, after J. M. W. Turner, R.A.," given by the artist, Mr. Frank Short, R.A., P.R.E., to illustrate the technique of the process. (Room 70.)

A series of six working proofs of a colour aquatint, "Kensington Gardens," by Mr. E. L. Laurensen, given by the artist; and three proofs of the new book-plates etched by Mr. G. W. Eve, for the Royal Library at Windsor; given (with the King's permission) by the artist. (Room 70.)

Working proof of the mezzotint after "The Huguenots," by Sir J. E. Millais, Bart, R.A.; and etched state of the mezzotint portrait of Sir William Sterndale Bennett, after the same painter; both by the late T. O. Barlow, R.A., and given by the Misses Barlow. (Room 70.)

Eight lithographs by Mr. Joseph Pennell, of buildings, factories, &c., in New York and Niagara; and six colour-lithographs by Professor Carlos Grethe (of which three were given by him). (Room 70.)

Two tinted pen-drawings by Constantin Guys; a drawing, "Summer," by James Ward, R.A., being a study for a subject afterwards engraved by William Ward, given by Mr. A. E. Anderson; and four sheets of studies of cats, hands, &c., by the late E. J. Gregory, R.A., given by Mr. Harold Hartley. (Room 70.)

On the staircase leading to Room 65 has been placed a very fine Chinese painting of quite unusual size and decorative quality, representing birds of Paradise and storks in a grove of bamboo, roses, and other plants. This has the signature Tei-ki, and is dated 10th month, 1st year of Che Shun, Horse Year (A.D. 1330). It was presented to the Museum by a donor who wishes to remain anonymous.

In Room 65 a good Japanese painting of a pheasant (early nineteenth century), one of a willow-wren on a pine branch by the living artist, Watanabe Seitei, and two original drawings by Kyosai have also been placed.

Additions have been made to the exhibition of illustrations of British stained glass, in Room 71, of drawings and tracings of glass at York by Mr. Laurence B. Saint; and to that of designs for textiles, in Room 72, of a series of original designs for Lyons silks of the Louis XVIII. epoch.

THE Italian *Gazzetta Ufficiale* of June 8 contains a notice, issued by the Ministry of Public Works, to the effect that tenders will be opened on July 6 for the construction of a new Post Office Savings Bank in Rome. The upset price is put at 127,200*l*. Although this contract will doubtless be awarded to an Italian firm, nevertheless the carrying out of the work may involve the purchase of some materials out of Italy.

VARIETIES.

THE Liverpool Cathedral Building Committee have received 2,000*l.* for a window in the south transept from an anonymous donor.

THE Visiting Committee of the Chichester City Guardians recommend provision of an outside staircase to the women's dormitory.

NEW buildings are to be erected for the Dumfries County Council at Dumfries at an approximate cost of 20,000*l.* Mr. J. M. Dick Peddie, Edinburgh, is the architect.

THE Chester County Council have given formal notice of their intention to enlarge the Neston Council school by providing additional accommodation for about 150 children.

THE executors of the late Rev. Canon Webb have paid over to the Vicar of St. Paul's, Crewe, 3,000*l.* towards the erection of a new church in the parish, to be called St. Peter's.

THE Leatherhead Urban District Council at their last meeting approved plans of the new schools to be erected on the Hilly Fields estate, and of additions to the girls' school, Poplar Road.

PLANS have been prepared for large new repair shops for the Canadian Pacific Railway at Coquitlam, British Columbia. It is stated that the shops will extend for nearly two miles.

THE Hull Corporation Property Committee on Friday adopted a recommendation that the front portion of the Town Hall be pulled down and re-built to harmonise with the new portion at an estimated cost of 27,521*l.*

THE Cardiff Corporation have finally approved the scheme, prepared in 1909, for the erection of a central fire brigade station in Westgate Street. The estimate for the building is 17,000*l.*

MR. C. F. C. CHURCHWARD, surveyor to the Dawlish Urban Council, has been appointed surveyor and water engineer to the Teignmouth Urban District Council at a commencing salary of 180*l.* a year, rising to 230*l.*

THE Ludlow Rural District Council have resolved to ask the Earl of Plymouth's permission to build a collecting reservoir at Craven Arms capable of holding about 3,000,000 gallons of water for an auxiliary supply.

THE Committee of the Royal South Hants and Southampton Hospital have accepted the tender of Messrs. H. Stevens & Co., builders, Southampton, for the erection of a new out-patients' department. The total cost, inclusive of fittings, architects' fees, &c., will be 10,609*l.*

MR. F. E. P. EDWARDES, F.R.I.B.A., city architect, Sheffield, was formerly with the Bradford Corporation, and after leaving Bradford for Sheffield continued to act as consulting architect with regard to the extensions of the Town Hall. At the last meeting of the Bradford City Council Mr. Edwardes was voted an honorarium of 100 guineas in appreciation of his services.

THE foundation-stones of a new English Congregational Chapel were laid at Rhymney last week. The new building will provide accommodation for about 400 worshippers, and will cost 1,400*l.* The contractors are Messrs. Williams & Sons, New Tredegar, and the architects Messrs. Habershon, Fawcner & Co., F.R.I.B.A., Cardiff.

THE Woking Sanitary Committee have had under consideration plans submitted by Messrs. Clemence & Moon for the development of a building estate near Triggs Lock; but the Sanitary Committee reported to the Council that they could not recommend the approval of the plans, as they showed the laying-out of a new street less than 40 feet wide.

THE Portsmouth Town Council last week adopted a recommendation to purchase for 8,000*l.* seven acres of the Goldsmith estate for the erection of a hostel and recreation ground for the Day Technical School. It is estimated that the maximum inclusive cost of the site and buildings to accommodate 120 students will be 29,600*l.*

THE Edinburgh Provincial Committee for the Training of Teachers last week considered tenders for the erection of the new Training College in the neighbourhood of Moray House. The contract was given to Messrs. G. & R. Cousin, Edinburgh, whose tender for the whole work amounted to 38,225*l.*

At Glasgow Dean of Guild Court, last week, linings were granted to the Corporation of Glasgow to erect a double villa and a villa at the corner of Dalkeith Avenue and Dumbreck Road, to the School Board of Glasgow to erect a school in Netherfield Street, and to Sir Donald MacAlister and others, Committee of Management of the Glasgow University Officers' Training Corps, to erect buildings within the grounds of the University.

THE Dean and Chapter of Winchester Cathedral, after consideration of various designs of buttresses and schemes for dealing with the south side of the nave, have approved a design by Mr. T. G. Jackson, R.A., for a double flying buttress. The buttress, which will terminate in a pinnacle in the Perpendicular style on the lines of Wykeham's pinnacles on the north side of the nave, will be placed at a distance of 6 feet 6 inches from the main wall. At half its height there will be a four-centred arch from buttress to wall, and from near its apex a flying arch in alignment with the arches in the nave aisle which support the thrust of the central vaulting of the nave. The front of the buttress will be richly panelled and traceried.

THE Local Government Board, having considered the application of the Tottenham District Council for sanction to borrow 2,432*l.*, for the purpose of erecting a central cooking depôt, from which meals for necessitous school children can be supplied, has replied stating that while some improvement in the present arrangements was desirable, sufficient grounds had not been shown to justify a large permanent depôt of the kind proposed. The scheme should be on a much less ambitious scale, and in the first instance should be of a temporary character.

THE Local Government Board have approved of a scheme of main sewerage and sewage disposal for the parish of Owston and Skellow in the district of the Doncaster Rural Council. There are several miles of main sewers to be constructed with cast-iron pipes, which will gravitate to an underground storage tank from which the sewage will be electrically pumped to the disposal works, where it will be treated in open tanks, followed by filtration through percolating filters before being discharged into the adjacent watercourse. The engineers for the work are Messrs. D. Balfour & Son, of London and Newcastle-on-Tyne.

IN the York Consistory Court, last week, faculties were granted to the vicar and churchwardens of St. Paul's, Middlesbrough, to build a choir and clergy vestry, to change the position of the organ and to convert the south choir aisle into a chapel for daily prayer; to the vicar and churchwardens of Eastwood, Rotherham, to extend the chancel; to the vicar and churchwardens of Bentley, Doncaster, to make alterations in the churchyard; to the vicar and churchwardens of Westerdale, Grosmont, to make alterations in the interior of the church.

At a meeting of the Court of Governors of Sheffield University on Friday last, the main business was the confirmation of some proposed alterations in existing ordinances and the establishment of a diploma in architecture. The Pro-Chancellor said the resolutions before the Court all denoted progress. As new subjects came up they had to incorporate them in their ordinances from time to time. The diploma in architecture is to be awarded only to candidates who have had practical training in the office of an architect, and who can present certificates showing that they have attended approved courses of study and passed the prescribed examinations. Mr. J. A. Wigfull, as representing the Architects and Surveyors Society in Sheffield, expressed appreciation of the new departure.

TRADE NOTES.

UNDER the direction of Mr. Thomas Owen, architect, Tydweiliog, the "Boyle" system of ventilation (natural), embracing Boyle's latest patent "air-pump" ventilators and air inlets, has been applied to the Calvinistic Chapel, Tydweiliog.

THE name of the Patent Indented Steel Bar Co., Ltd., has been altered to the Indented Bar and Concrete Engineering Co., Ltd. The business of the firm will not be altered, but will be carried on under the new name at the same address, Queen Anne's Chambers, Westminster.

WE are informed that the Portland stone used in the Anglo-American Oil Company's offices and the Radium Institute, illustrated by us last week, was supplied from the quarries of Mr. F. J. Barnes, and the stone for the latter building was quarry-worked.

THE rebuilding of Cartago, Costa Rica, which was practically destroyed by earthquake in May of last year, has been commenced. The damage to property exceeded 500,000*l.* In consequence of the rebuilding a considerable impetus has been given to the building trade in the capital. A demand has sprung up for metal lathing, light structural iron, roof iron, and Portland cement.



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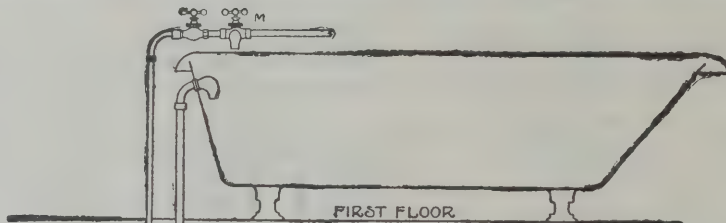
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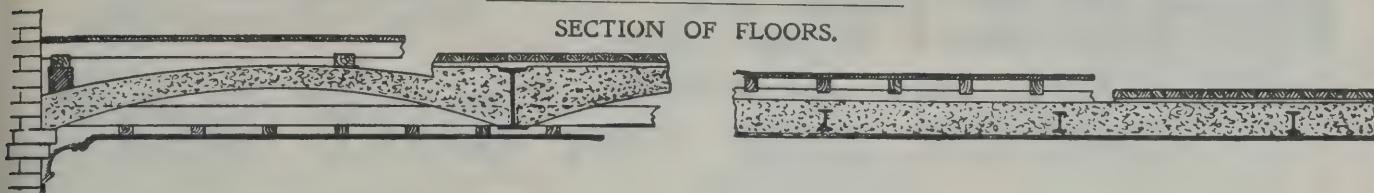
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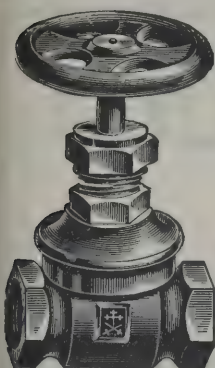
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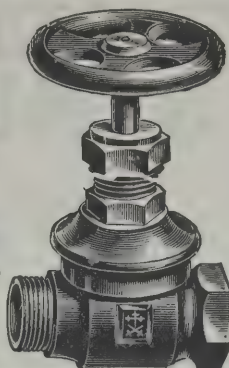


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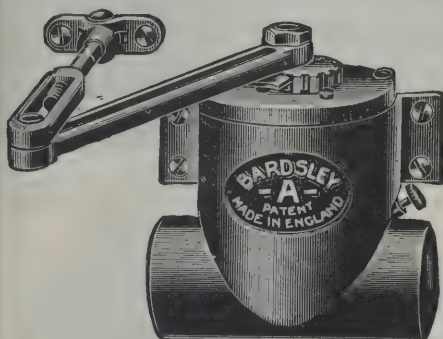
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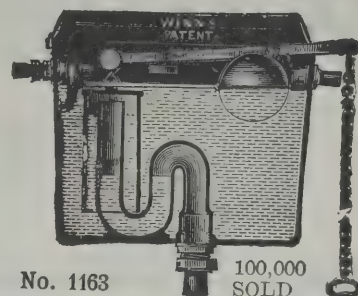
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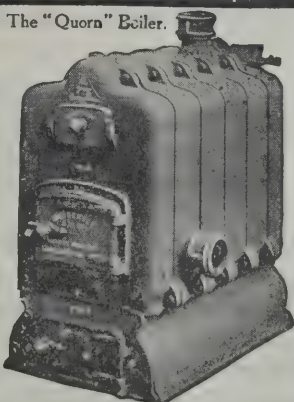
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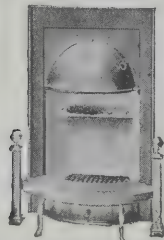
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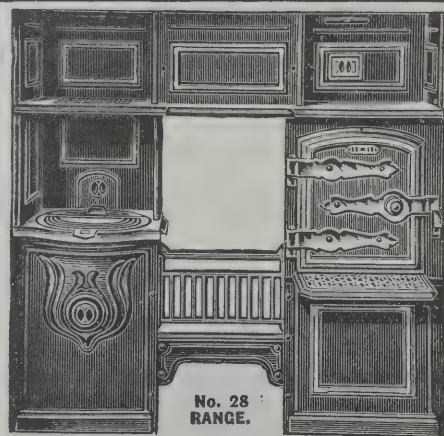
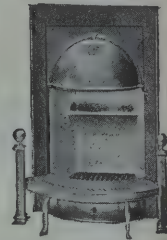
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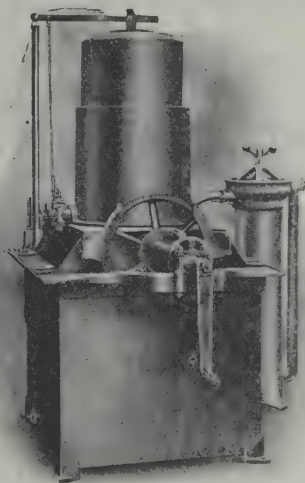
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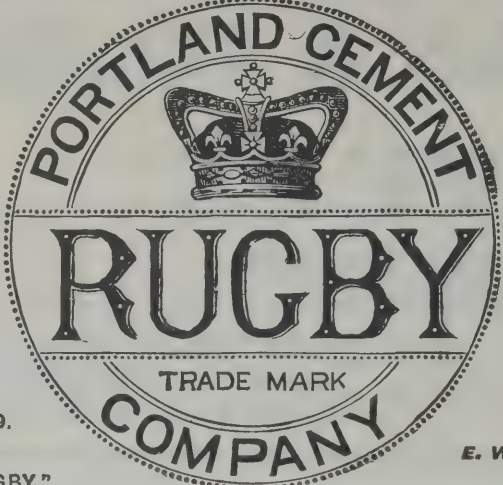
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